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The Nutritional Improvement of Life[1]

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We who worked with Mrs. Rose will always remember how gifted she was. Heredity, and the providence that presides over each person's original endowment, gave her much. But she never rested upon her gifts, to her they were always means, not to privilege, but to effective service. So, while she was uniquely gifted, yet in her methods and spirit of service, all can in some measure follow her example.

By scientific self-discipline she preserved her native quickness while transmuting impulsiveness into infectious enthusiasm guided and supported by the courage of conviction.

She thought thoroughly before making a decision. Having chosen her path thoughtfully, she followed it wholeheartedly; and threw into action the full measure of her physical, mental and moral energy. Outspokenly and unswervingly she exemplified what Stuart Chase has called "the luxury of integrity."

From her classroom and laboratory she carried the services of the science of nutrition to individual people and to the world of affairs. What we take to have been the unifying thought of her career, we have chosen as the title of this talk, *The Nutritional Improvement of Life*.

The nutritional improvement of life can and should be begun before birth, for while we do not expect nutrition to change the chromosomes, it does affect the internal environment which conditions the development of the unborn.

This has been made especially clear by the recent researches of Stuart, Burke, and their co-workers at the Harvard Medical School.

King has summarized these Harvard findings as follows:

(a) The chance of an infant being essentially a perfect specimen and showing robust health was 4 times greater when the mother's diet had been superior (graded "good" or "excellent").

(b) The risk that the infant would have a low health rating was 20 times greater when the mother's diet had been inferior (graded "poor" or "very poor").

(c) If these Harvard findings applied throughout the country, better nutrition in American homes would mean that well over 1,000,000 American babies each year would start their lives at a higher health level.

The importance of well-balanced nutrition in infancy needs no discussion here.

When the child has grown to school age, he is still very responsive to improvements in feeding. British research in the supplementary feeding of school children has now been carried on very thoroughly in 3 independent investigations.

First, Dr. H. C. Corry Mann in the 1920's experimented for 4 years with some dozens of boys in a well-supported boarding school where the original diet had been planned with every regard for the welfare of those who were to receive it, and had been accepted as satisfactory by the medical opinion of the time. When a part of these boys were continued on this same dietary as a control group while other groups under otherwise identical conditions received, respectively, supplements of extra milk, of butter, or of watercress, those receiving any of these supplements made better gains in both height and weight than did the controls.

The best gains were made by those receiving the extra milk, and of these both Dr. Mann, who personally conducted the work and Dr. Walter Fletcher, judicially-minded physician and member of the British Medical Research Council who independently evaluated it with great critical care, explicitly reported that the supplemental feeding improved the rate of mental as well as physical development. Dr. Fletcher emphasized that, although healthy and provided with a food supply "medically adjudged to be sufficient for healthy development, the boys were in fact not attaining" (on this original diet) "to the physical and mental growth of which they had the potentiality, and to which they did attain when given an extra ration of milk."

A second British research in this field was that called the Lanarkshire Experiment in which one-half of a school population of 20,000 children were con-

[1] The Mary Swartz Rose Memorial Lecture, given February 8 at the New York Academy of Medicine, under the auspices of the Greater New York Dietetic Association. Received for publication March 27, 1946.

tinued on their usual home diets while the other half received extra milk on each school day for 4 months. Thus as compared with Corry Mann's study, there was less precise control but the numbers of children were very much larger. The results as officially interpreted and reported demonstrate that the addition of extra milk to the diets of these children had a pronounced beneficial effect "in improving physique and general health and increasing mental alertness."

In the third of these researches, under the legislation known as the Milk-in-Schools Scheme, the experimental feeding of extra milk to school children was extended to hundreds of thousands of cases and officially reported as producing unquestionable improvement in "the children's physical well-being, zest, and mental alertness," and as constituting a "great social and educational advance."

Thus these 3 independent investigations, using different methods, all consistently showed improved mental as well as physical growth and functioning when passably adequate dietaries were nutritionally improved. In all 3 researches the investigators definitely found that the nutritional improvement was mental as well as physical. The nature of the mental gain thus induced by nutritional improvement in the food of these representative school children was scientifically and officially recorded in such terms as increased alertness, mental growth and increased rate of progress in their studies.

A different kind of research, but of related interest and significance, is that of Harrell who found in very carefully controlled experiments an improved rate of learning when children's already passable dietaries were supplemented with thiamin. Thus the evidence that the already normal can be improved by more scientifically adjusted nutrition, appears to be established for mental growth, alertness, general progress in studies and rate of learning specific things.

Then at the stage of college entrance we find that young people of both sexes who have grown up in the era of the newer knowledge of nutrition, enter the same colleges both taller and younger than did their predecessors of 20 to 30 years ago. Where data are available for the further study, this is found to be equally true for averages of whole college classes and for comparisons of sons with their fathers. While several things may contribute to such earlier attainment of this degree of both physical and mental maturity, it seems certain that nutrition is one of the chief factors.

Recently many American colleges have studied the nutritional status of their students; and we may hope that such survey studies will be followed by controlled investigations of the nutritional improvement of the life process during the college years.

When, in this study of the nutritional improvement of life, we now pass on along the life cycle, from the stage of the college student, to the long segment of full adulthood, we find that the evidence of direct human experience, taken alone, becomes more difficult to interpret. This is inevitable for a combination of reasons. Today's adults of middle-age or over were born too early to have had the benefit of the modern knowledge of nutrition during their most formative years. Also it is more difficult with most middle-aged adults to so arrange and control the conditions of life as to make food the sole significantly variable factor. Furthermore, the cessation of growth and of at least the more accessible phases of development, leaves the investigator with fewer yet more complex criteria.

Especially is this true when we seek to evaluate mental efficiency in considering the well-being of adults. Is the promise of increased adult efficiency through wiser use of food and consequently superior nutritional status as valid for mental as for muscular work? While much of the evidence on this question is more circumstantial than direct, scientific probability strongly supports an affirmative answer.

No matter how predominantly mental one's work may seem to be, the ability to carry it through effectively depends much upon the stamina of the organism and its internal environment as affected by the food. Here the blood, with its lymph, is the great mediator; and the same blood circulates through all the organs of the body, carrying the characteristics which the dietary induces, for better or worse, to the brain and the nerves quite as truly as to the muscles and the liver. There is strong reason to believe, and no reason to doubt, that much the same food adjustments that so clearly improve the biological value of the ordinary American dietary will make for increased efficiency in brain work as well.

Systematic observations and records of human experience already yield reasonably well-controlled evidence that superior nutrition improves the performance of factory workers—especially relatively long-term performance of work involving mental application and morale—and also the efficiencies of aviators and of people engaged in matching colors and textures. There is also clinical evidence that people living more largely on fruits, vegetables, and milk show less incidence of senility or degenerative disease at a given age. And while some of this direct human adult experience is as yet more or less fragmentary, either as to completeness of exact control or in the sense of covering only a part of the life cycle of each individual, yet we have samplings of human experience at different ages, and these have been so verified and unified through controlled full life experimentation with suitable species of laboratory animals as to fill in the picture with strong scientific conclusiveness. It is worth remembering that the modern science of nutrition has not existed for as many years as are contained in the human life span. And so, wherever life history becomes part of

a nutritional problem, the evidence of direct human experience must at best be an assemblage of separate cross sections in which different segments of the life cycle are observed in different people. Observations of complete life histories have, however, been made upon many hundreds of laboratory animals whose life spans are shorter than the human, yet whose nutritional chemistry is similar to ours with respect to the factors involved in the problem under investigation.

In these ways we now know that the scientific guidance of our nutrition holds much greater potentiality for the improvement of human life than even science itself had imagined in any previous decade, or, perhaps, than most of the scientists themselves have yet fully visualized and firmly grasped.

The benefits thus made clearly and directly available include, beside those already mentioned, a lowering of death rates and an increase of vitality or building of higher positive health at all ages, and longer lives for adults.

Previous advances in public health had lowered death rates in only the earlier segments of the life cycle, improving the "life expectation" of the infant but not of the middle-aged adult. Now the new knowledge of nutrition offers to those who will use its guidance a further gain for the young and also an improved adult life expectation such as science had not been able to offer before. The same nutritionally guided improvement of food habits offers more advantageous development, higher health, and longer life all to the same individuals,—with continuation of like benefits in those of their offspring who follow the same good family food habits. Such lengthening of useful lives will be of great benefit to community well-being and to human progress.

Ours is the first generation to which this opportunity has been so clearly open—and it deserves careful thought, both for ourselves and for those we are now starting in life.

The late Dr. R. S. Woodward remarked, in speaking of the shortness of life, that a scientific or professional worker will usually have lived one-third of the traditional 70 years by the time formal schooling is finished and one's lifework is begun, then about another third generally must be spent in developing our capacities and in proving what we can do, before we are entrusted with our highest responsibilities and opportunity; and so only one-third of one's years remain in which to render one's best service to the world.

This remark of Woodward's has been verified by studies of records. Several hundreds of biographies have been studied as to the ages at which scientific and professional workers and executives have attained their major opportunities; and it has appeared that individuals most frequently attain their major opportunities at around 48 to 50 years of age; that is, as Woodward put it, when there remain for their most important services to society only one-third of the traditional three score and ten years of life.

Clearly the increased opportunity which science now offers, of something like an extra decade inserted at the apex of the prime, of the life lived according to present knowledge of nutrition, is of far-reaching importance both to the attainment and enjoyment of full individual potentialities and to the social value of one's lifework.

The importance of this becomes still more impressive upon further thought, for, as the late Dr. John Merriam emphasized in his essays on the significance of science, human evolution is now largely social, and society is a continuing organism interested in its own future. What promises to affect this future should influence our decisions from day to day and will do so more effectively with the growth of the scientific spirit which expects progress and works for it. Meanwhile the shortness of individual lives tends to set a limit to our actual use of the knowledge which we have accumulated, and of the institutions which we have built and developed. Hence the longer term of fully efficient years, which the newer chemistry of nutrition offers, may be of far-reaching significance to human progress in affording fuller opportunity for the use and enjoyment of an ever-growing body of knowledge.

It is a fact deserving special emphasis that all these gains are fundamentally due to improvement of the body's internal environment, that which directly environs and conditions the life process as a whole. Thus the life cycle becomes longer because the life has been lived on a higher health level throughout. Hence the life history nutritionally improved may confidently be expected to show a higher level of attainment at its prime, a longer "period of the prime," and a smaller percentage of years of dependence.

This summarizes what both the world of science and the world of affairs are rapidly learning to expect of the new knowledge of nutrition, of food values, of the potentialities of food and nutrition for higher attainments in health and efficiency: benefits both physiological and economic, but also more than both of these.

For here in the field of food and nutrition the findings of scientific research have placed in our hands and minds an increased ability to deal with values which are above price, for the health, happiness, and efficiency, and for the enhanced duration and dignity, of human life.

These facts are already known, yet now they may nevertheless merit renewed attention for two reasons: (a) because the evidence has become stronger and clearer with each of the recent years and is now generally recognized to have grown beyond the realm of opinion into that of objectively established fact; and (b) because the awareness of the significance of this Nutritional knowledge for human well-being has re-

cently spread very rapidly from the field of research, to that of medicine and public health, and now on into the world of affairs. As a publicist of world-wide outlook has recently said, "Nutrition is both a science in itself, and it is an instrument of social policy."

Many people and many nations have recently waked up to regard better food supplies, especially for low-income families, as a matter of public health and social justice. Now, much more actively than ever before, we are all coming to want the better life whose first essential is nutritional well-being. We want it individually and for our families, we want it for our fellow-citizens of the United States, we want to do our part toward bringing it within the reach of the other peoples who have joined us in organizing the United Nations.

These nations are uniting because they want a world that permits its various peoples to develop, each in accordance with its own cultural genius, yet all in a world-atmosphere or world-environment of social justice.

In the field of food this will mean a scientifically honest discrimination between those differences in food habit that are due to cultural choice and those that have been forced by undue economic disparities, which latter we now wish to ameliorate in a spirit of more equitable distribution of the world's food among the world's people.

For instance, most of the other countries with which we have joined to form the United Nations, support from 2 to 6 times as many people per 100 acres of comparable land as do we here in the United States. The two chief factors in this difference are that the peoples of the older civilizations give more human effort per acre to the care and cultivation of cropland; and that they bring more of the crop directly into human consumption, while we feed much more of it to meat animals. Thus we hold a great deal more than our pro rata share of the world's resources for food production, and we can see a line of adjustment in food management by which nutritional benefit can be brought both to our own and to other peoples.

Let us now consider a few first and clearest steps in this line of improvement. We may simplify the grouping of foods into six categories: (a) grain products; (b) vegetables and fruits; (c) milk and its products other than butter; (d) meats, fish, poultry and eggs; (e) fats; (f) sugar and sweets.

Grain products are still the staff of life in that they are the largest contributors of calories and protein to most dietaries. Also, with continuation of enrichment or with consumption in less highly refined forms, the grain products will go far toward meeting our needs for iron, thiamin, and niacin. Their contribution of riboflavin is also important but does not meet so large a fraction of our nutritional need.

Vegetables and fruits differ enormously among themselves, but as a group, and when we use the various kinds wisely, they can entirely balance the relative shortages of some nutrients in the grain products, and go a good way toward balancing the others. Thus the direct food crops (grain crops, vegetables and fruits) when wholeheartedly put to full use according to the knowledge of today, carry us farther than we formerly supposed toward a food supply of optimal nutritional value. But more calcium and riboflavin will certainly improve such a diet; and probably it will gain, especially for pregnant women, by addition of some animal protein.

Milk represents the most efficient production of animal protein and is at the same time the outstanding source of both calcium and riboflavin. Undoubtedly, the more open-minded we are in using the guidance of the newer knowledge of nutrition for greater efficiency in food management, the more extensively will we meet our needs through grain products, fruits, vegetables and milk. But another high protein food will usually be added from the next group.

Meats, fish, poultry and eggs. How much of these foods may best be added to liberal amounts of the foods already named, if the purpose is to make the dietary satisfying to people of American food habits and nutritionally excellent, while at the same time so conserving food resources as to spread the benefits of better nutrition to as many other people as possible?

The National Food Allotment Plan under consideration by the U. S. Senate proposes 4 eggs, and 1 lb., 8 oz. of meat, fish, or poultry per person per week, or a total of 2 lb. per person per week for foods of the meat, fish, poultry and egg group. This allotment was carefully considered and probably represents as good an estimate as we have of a standard fully adequate for optimal nutrition, and consistent with American food habits, and with proper regard for conservation of food resources.

If those who now eat more should decide to be satisfied with this amount, there would still be ample market for all the meat and eggs produced, but the consumption would be more equitably distributed. The more nearly even distribution would certainly promote the nutritional well-being of the population as a whole, and (leaving medical questions to medical men, and speaking for the normal nutrition of people generally) I do not know of any evidence that those normal individuals who had previously eaten more would suffer any disadvantage.

If this lessened competition by those of high purchasing power should result in a very slight reduction in the price, some farmers would shift slightly more of their feed grain from the production of meat to that of milk; and the increase in the milk supply would undoubtedly constitute a very real benefit. The two results taken together would mean social

gains both in nutritional well-being and in easing the strains of economic disparity.

A moderate level of meat consumption and more equitable distribution of it, with emphasis on the grass- and legume-fed rather than on the heavily grain-fed meats, doubtless would contribute to the improvement of human life not only through health and efficiency but also by ameliorating a too-obvious economic disparity, and thus tending to increase good will. Then some of the grain that now goes into meat production could be turned into increased production of bread and milk for those who need these foods for health.

Fats also present a problem such as we have just been considering with reference to the question, "How much meat?" Economic disparities put the people of the United States in position to consume greater amounts of fat than are available to most other peoples. How far our high consumer demand for fat is in any way advantageous, or at what level it becomes sheer self-indulgence is still not clear after studying all the scientific evidence, including the psychological. A moderate level of fat consumption more widely distributed would doubtless be better for all concerned than the striking disparities that have prevailed in many parts of the world hitherto.

Sugar and sweets. The per capita consumption of sugar by the people of the United States increased in 3 generations about tenfold or nearly 900 per cent. Doubtless all will agree that it will be better for all concerned to let the world's people share more equally in the consumption of the world's sugar crop. What calories we thus relinquish, to give others their fair share of sugar, we can easily and advantageously make up by increased consumption of protective foods. Thus these last 3 food groups (meats, fats, and sugar) can be more evenly shared with benefit both to nutritional well-being and to the sense of social justice.

Our new knowledge of the potentialities of nutrition for the improvement of life brings a new order of opportunity and responsibility to all who have to do with any link in the chain of causes and effects that bring the use of food supplies and food production resources into the service of human well-being. Doubtless we all believe in "the American dream" or ideal objective of a more abundant life and fuller, fairer, more equitable opportunity for all. And in the light of today's knowledge of the influence of nutrition upon development, health, and efficiency, it is clear that the principle of a fair opportunity for all must henceforward mean, among other things, the adequate nutrition of each.

Many who understand the significance of what is involved will by their own decisions conserve food production resources so that the benefits of the new knowledge may be extended to as many people as possible. For it is chiefly consumer demand that determines the proportions in which different foods are produced.

Our new knowledge implements the American ideal of equal opportunity for all. And it is now clear that in order for this ideal of opportunity to be real and effective, every individual must have the food he needs for health.

The needed adjustments have three main aspects: (a) Utilization of our large national resources for production of direct food crops so that hunger can be conquered over a wide front. (b) Some shifting of emphasis of domestic consumer demand to larger use of the more protective foods. (c) Partly because of this last, a moderation of our competition for meats, fats and sugar so that there may be a more equitable distribution of these foods with resulting easing of the strain of conspicuous economic disparities. At present, too large a proportion of American people tend to spend too large a part of their purchasing power for sugar and for grain-fed meats and fats.

In general, the production of the luxury beef that gets the market grade of choice or prime is a result of heavy grain-feeding. These grades are usually fatter than the lower-priced grade called good; but in everything except fat, the good is of higher nutritive value than the higher priced choice and prime.

In this heavy grain-feeding of meat animals the farmer's (or feeder's) incentive is the hope of getting a higher price per pound. But the extra meat thus produced is at the expense of a very considerable amount of grain which would otherwise in part be milled for human food so far as there was a market for it; and, usually in larger amount, would be used to increase milk production to the great nutritional advantage of the people.

The needed adjustment can come about in one or both of two ways: (1) Government, which entered largely into food management temporarily during the war, might do so again, and permanently, in the interest of better nutrition of its people, and conceivably also of other peoples, to promote peace and good will. (2) Consumers if made aware of the situation might remedy it by voluntary moderation of their demands for grain-fed meats, and for fats and sugar.

In any case there is and will be need for education of public opinion to a policy of using something more than merely the blind working of the money-profit motive, in a matter so outstandingly important to health and well-being as is nutrition.

As Galsworthy told us in his serious postwar mood of 1920, we should make health rather than wealth our ideal and make that ideal effective by education from infancy up.

Human Starvation and Its Consequences[1]

ANCEL KEYS[2]

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PEOPLE do not starve in this country except by rare accident. The United States is the best fed country in the world though we all realize there is still much to be done before the national dietary is equal to our food resources. But in spite of our pellagra and our so-called "subclinical deficiencies", in spite of the uncompleted task of discovering and using the best diets for growth, for longevity and for the treatment of the sick, in spite of these things, it is proper to consider the plight of peoples elsewhere. It should serve to restore a sense of proportion in the developing science of nutrition to discuss the real undernutrition as it exists today in many parts of the world. Impatience with the progress in unraveling the mysteries of optimal levels of vitamins and amino acids may be tempered by realizing how little we know about caloric deficiency and the recovery from semistarvation.

At the present time it is safe to estimate that at least 80 per cent of the world population suffers from some degree of caloric undernutrition and many millions are existing in a state of semistarvation or have not recovered from recent semistarvation. What does this mean? Apart from the immediately obvious social, economic and political implications we may ask what happens to mind and body in semistarvation, what is needed in rehabilitation and how long do the effects persist?

In a general way we know that prolonged undernutrition which produces a weight loss of more than 15 per cent results in emaciation, weakness, apathy, reduced metabolism, bradycardia and a tendency to develop edema. Recently it has been possible to add greatly to this qualitative picture so that a detailed quantitative analysis of the results of semistarvation is emerging. Much scattered and uncontrolled data have been collected in famine areas in the recent war and immediately afterwards. The most detailed information has been provided by the experiment at the University of Minnesota. Fortunately, it appears from the evidence from the field that the Minnesota experiment duplicated, nutritionally, the condition of severe famine so that the results have wide application. In the discussion to follow the Minnesota experiment will serve as the basis of evidence. Some few details have been summarized elsewhere (1–8).

The Laboratory of Physiological Hygiene of the University of Minnesota began extensive research on war-related problems of nutrition early in 1941. By the end of 1943 it appeared that the most urgent questions of combat rations, of emergency subsistence and of nutrient composition of processed foods were diminishing. My colleagues, Drs. Olaf Mickelsen, Henry Taylor, Austin Henschel and Josef Brozek, agreed with me that the inevitable war famine would come and that extremely little was known in detail about either chronic starvation or relief feeding. The necessary research was planned but it was late in 1944 before the actual experimental work could start. Funds were provided by the "peace" churches, by the Markle Foundation, by the Sugar Research Foundation, by the National Dairy Council and by the Laboratory. Later the Office of Scientific Research and Development and the Office of the Surgeon General, U. S. Army, joined in the program.

The plan was to study in precise detail the physiological, psychological, and performance charac-

[1] Received for publication April 25, 1946.

The facts upon which this article are based were obtained in the course of a research project supported from various sources. From the outset, sponsorship was provided by: The Brethren Service Committee, the American Friends Service Committee, the Unitarian Service Committee, the Mennonite Central Committee, the Sugar Research Foundation, New York, the National Dairy Council operating on behalf of the American Dairy Association, and the John and Mary R. Markle Foundation, New York. Beginning July 1, 1945, the work was supported in part under a contract, recommended by the Committee on Medical Research, between the University of Minnesota and the Office of Scientific Research and Development. On November 1, 1945, the responsibility for this contract was assumed by the Office of the Surgeon General, U. S. Army.

[2] Besides the author the responsibility for the planning, operation, and analysis of this research was shared by the senior staff of the Laboratory of Physiological Hygiene; Drs. Olaf Mickelsen, Henry Longstreet Taylor, Josef Brozek, Austin Henschel and Ernst Simonson, and Angie Mae Sturgeon.

teristics of a group of normal men on an adequate standard diet and then to place them on a European famine diet designed to cause a loss of one-fourth the body weight in 6 months, repeating the measurements and observations at intervals. Finally, the men were to be rehabilitated on different controlled relief diets so as to estimate the effects of different caloric, vitamin and protein levels on the character and rate of recovery. An important part of the scheme was that the men were to be housed and fed in the Laboratory and kept on a standardized regimen of work and general mode of life.

From many volunteers under Civilian Public Service, 36 conscientious objectors were selected as "guinea pigs" for an ordeal scheduled to last a year. These men were normal, that is, free from disqualifying physical or mental defects, and represented a considerable range of body type and physical fitness within the age limits of 20 to 33 years. As a group they could be considered average healthy young men.

For 3 months of control and standardization these men required slightly more than an average daily intake of 3,150 calories to maintain balance. The diet was nutritionally good but not remarkable; it was designed to correspond to ordinary fairly good dietary practice. The mean daily intake of protein was 110 gm. and fats supplied about 30 per cent of the calories. Ascorbic acid, thiamin, riboflavin, niacin and vitamin A intakes did not depart widely from the recommendations of the National Research Council.

The semistarvation diet was based on the food items used in Europe in times of famine, that is, mainly potatoes, turnips and coarse cereals with only very minute amounts of meats and dairy products of all kinds. According to our calculations about 1,800 calories daily would bring about the desired 25 per cent weight loss in 6 months and this amount was planned initially; later empirical adjustments resulted in an average daily intake for 6 months of 1,760 calories. The total daily intake of meat, fish, cheese and eggs combined averaged 29.4 gm.—very slightly over 1 oz. The total extractable fat content averaged 22 gm. per day.

This diet, except for calories, is nutritionally better than might appear at first sight. Potatoes, as the English have discovered, are a remarkably good food and the virtues of whole cereals cannot be too widely proclaimed. This diet provided a daily average of about 49 gm. of proteins, 1.3 mg. of thiamin, 21 mg. of niacin, 0.7 mg. of riboflavin, 30 mg. of iron, 0.76 gm. of calcium and 1.24 gm. of phosphorus. Recent data from Europe indicate a very close correspondence in food items and in nutrients between our semistarvation diet and that used in the famine areas of western Europe in 1944 and 1945.

Space does not permit even a summary of the several hundred items of measurement in the appraisal of functions and characteristics of our subjects. These ranged from the anthropometric to the psychiatric and included details of circulation, metabolism, psychomotor performance and responses to standardized stresses, as well as all ordinary items of medical examination. It should be noted that all tests and measurements were made under closely controlled and standardized conditions and have been analyzed statistically as to reliability, inter- and intra-individual variations and the significance of differences and trends.

Figure 1 shows the average body weight in semistarvation and in the first 12 weeks of rehabilitation. There was a mean weight loss of 16.8 kg. (37 lb.), which represented 24 per cent of the control body weight. The actual loss of body tissue, however, was considerably more than this, being somewhat obscured by the development of edema and a general state of excess water in the body. At the end of semistarvation there was an average of about 12 to 16 lb. of excess water in the body so the real tissue loss was close to 50 lb. per man. The total blood volume changed considerably less in proportion to the body weight change and there was an actual increase in the plasma volume; in other words, there was hydremia as well as edema.

Most of the weight loss was from the muscles and there was a notable shrinking of the heart as seen by X-ray examination. As we should expect, there was marked weakness, especially in tasks requiring any endurance. The loss in strength for a single muscular contraction amounted to about 30 per cent but the loss in capacity to continue work which would ordinarily result in exhaustion in a few minutes was close to 80 per cent. The average values for the best measure of brief endurance are summarized in Figure 2. The speed of small muscular movements, however, was little affected and the loss in neuromuscular coordination was considerably less than in strength.

The shrunken heart beat slowly but regularly and there was evidence that the circulatory function, though much depressed, was conserved somewhat better than the muscular function. There was a small decrease in blood pressure. The resting bradycardia was remarkable; the average heart rate in basal rest was 35 per min. after 12 weeks of semistarvation and 37 at the end of 6 months. This slow heart rate differs from the bradycardia of beriberi in that exercise does not provoke an excessively fast heart rate in the starving man. We may also contrast the big heart in beriberi with the small heart in starvation.

This starvation bradycardia may be considered, at least in part, as a protective adaptation, conserving the heart and economizing on calories. On the latter point the values for basal metabolism were striking. In the control period there was an average basal oxygen usage of 229.2 cc. per min. This fell to

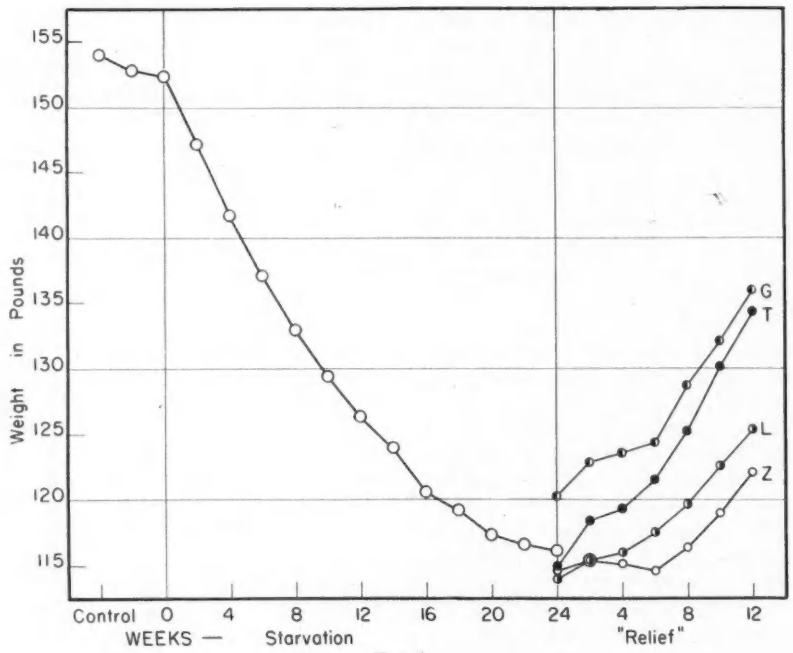

FIG. 1

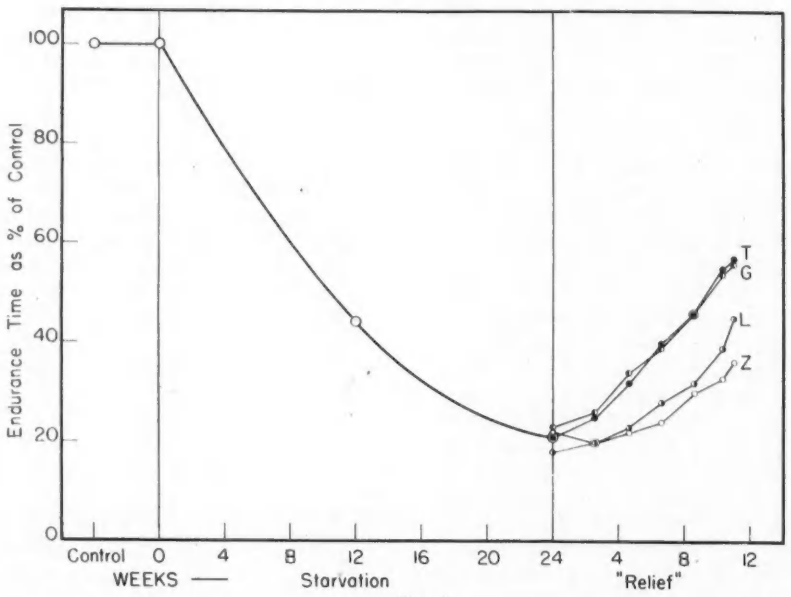

FIG. 2

155.2 and then 140.6 per min. after 12 and 24 weeks respectively, of semistarvation. Even in terms of metabolism per unit of body surface there was a fall of about 30 per cent. However, if the basal metabolism is calculated per unit weight of active tissue, correcting for fat, extracellular water and bone, the decline in metabolism was approximately 10 per cent.

Associated with the decline in basal metabolism and the diminished blood circulation there was a slight drop in rectal temperature and a more pronounced fall in skin temperature. The subjects were always cold and slept under 3 or 4 blankets even in the heat of July. They frequently volunteered the statement that the victims of famine abroad must suffer horribly in cold weather with inadequate clothing and unheated houses.

More distressing than cold to the subjects, however, were unremitting hunger, weakness, depression and a sense of being old. In contrast to a total fast there was no diminution of hunger; after a few weeks the men could think of little else but food or subjects closely related to it. They dreamt of food by day and by night and their conversation, which grew progressively more laconic, usually turned on food—eating it, cooking, farming, and so on.

A part of the sense of old age shared by all the men seemed to be related to sex. They had no drive, no interest in sex, and the examination of semen specimens revealed marked abnormalities. The concentration of sperms became very high but only one-third of them were viable on first examination and of those alive the duration of viability was scarcely one-fourth the normal value.

All evidences agreed that the men tended strongly toward neurosis in semistarvation but no changes of a real psychotic nature were observed. They were profoundly depressed, markedly hypochondriacal and moderately hysterical, but no fundamental qualitative changes in the personality structure appeared.

Some characteristics and functions were resistant to the semistarvation. Exhaustive tests and measurements in the intellective area showed no loss in intelligence, memory, reasoning power or comprehension, although there was very evident mental as well as physical lethargy. Visual functions were completely unaffected while hearing actually was slightly improved. The reason for the latter is probably the fact that in semistarvation the general shrinkage of tissues would result in some increase in the lumen of the auditory canal.

Careful search revealed few if any unequivocal signs of vitamin deficiencies. Folliculosis, occasionally accompanied by follicular hyperkeratosis, was seen in most of the men but the microscopic picture of biopsy specimens was not typical of vitamin A deficiency and the blood levels of vitamin A and of carotene were normal. There was no polyneuritis, corneal vascularization or bleeding gums, no red or sore tongues. Plasma ascorbic acid and urinary thiamin levels were those associated with sufficiency in these vitamins. Urinary riboflavin was low but we have observed in many experiments that riboflavin excretion is readily modified to extreme degrees by factors other than riboflavin intake. It is possible that the frequent appearance of slight cheilosis was associated with riboflavin inadequacy but there was no supporting evidence. It should be noted that in these men, as is true in starvation in general, a considerable share of the total metabolized "diet" was actually the tissues of their own bodies; the vitamins in this raw "meat" must be available to the remaining tissues and should be utilized with high efficiency.

The repeated careful examination of the men revealed in great clarity several peculiar effects of starvation. The majority of the men gradually developed a peculiar splotchy skin pigmentation which looked, at first sight, for all the world like dirt. The brownish gray patches of skin, most frequently seen over the cheek bones but also appearing on apparently any part of the body at random, were sharply delineated from the neighboring pale skin. At the same time this phenomenon was seen in Minnesota, Allied medical officers were puzzled by it among the famine victims of the Nazis in western Europe. A search of the literature showed this had been noted in a few obscure field accounts of famines in India and in Ireland but these observations had been lost. An interesting and perhaps important metabolic phenomenon undoubtedly was involved in this "famine pigmentation". The Minnesota experiment proved that exposure and lack of skin hygiene are not responsible.

Another peculiarity was revealed in the search for signs of corneal vascularization. To our surprise not only were such signs entirely absent but the normal blood vessels of the conjunctiva and sclera of the eye gradually disappeared from view in starvation. The whites of the eyes took on a dead-white appearance suggestive of unglazed porcelain. The sclera resembled that of small children in the absence of visible blood vessels but exhibited none of the liquid bluish cast of the infant's eye. Again, observers in western Europe saw the same abnormality at the same time and, like the skin pigmentation, no explanation is forthcoming.

The occurrence of edema in our subjects afforded an opportunity to re-examine the question of famine edema, so much discussed at the end of the first World War. All the textbooks glibly explain this as one of the simplest forms of edema, being occasioned by protein inadequacy which results in a subnormal colloid osmotic pressure of the plasma so that this normal restraint to fluid filtration into the tissues is lost. But we found that edema occurred with essentially normal plasma proteins. Again, scattered but convincing confirmation is available in the recent observations in Europe. The possibility of slight heart failure which would dam up the blood and so increase the filtration pressure was likewise ruled out; the venous blood pressure was considerably below normal in these men. Elsewhere we have briefly discussed this problem (9). Here it must be enough to state that this experiment would seem to necessitate a complete re-evaluation of the theory of edema formation.

I have dwelt on the great similarity of the controlled findings in Minnesota and the observations abroad. There were, however, some differences chiefly traceable to lack of soap and elementary hygiene in the famine areas and prison camps.

An outstanding difference was the lack of diarrhea in our men and its prevalence abroad. Bacillary dysentery could not be demonstrated in many rescued Allied prisoners of war who suffered from violent diarrhea. The presence of extremely coarse and nondigestible material in their diets may have been responsible. Our men, like those abroad, exhibited marked polyuria. The daily urine volume of the Minnesota volunteers doubled in semistarvation. There were no signs of real kidney dysfunction; it would seem that the kidneys were doing more than their share in the attempt to correct the general excess hydration of the body.

Such then, in brief, is the picture of semistarvation. If unrelieved, the weakness and apathy increases, the whole machine runs slower and slower and the flame of life burns so feebly that it may be hard to tell the living from the dead. Any infection is liable to prove fatal and the mortality records show sharp rises in the deaths from almost all causes save, perhaps, diabetes and spontaneous vascular accidents. Incidentally, these mortality records show that our concern for the weak women and children in famine areas may be misplaced. In all parts of western Holland in the 1945 famine the data were consistent. At all ages the famine mortality was considerably higher among males than among females and at all ages over one year the children fared better than the adults. The first victims of famine were always the aged. There are indications of similar findings in the siege of Leningrad (1942–44) and in the Indian famines.

The problems and findings in nutritional rehabilitation following semistarvation require separate discussion beyond the scope of the present paper. It will be noted, of course, that these problems are of great theoretical and practical importance. How long does it take to get back to normal? Are there any permanent residues? What should the diet be in the first stages of relief? What are the most efficient levels for calories, proteins, vitamins, and minerals in re-feeding? What are the optimal levels? These and many other questions must be asked and answered to gauge the magnitude of the relief task, its duration and cost, and to ensure the most effective and efficient operations.

Here it may be stated that very special foods and feeding practices are not needed except for a very few victims of famine. Intravenous alimentation is not only unnecessary but is very dangerous. So-called scientific food concoctions are not required and tend to defeat the desired ends because, like all unfamiliar foods, they are less readily consumed than more ordinary food items. Definite vitamin deficiencies should be corrected if they exist; in many cases, perhaps the great majority, vitamin pills and concentrates have no demonstrated value if the relief diet is properly designed from ordinary foods.

In relief feeding, calories are of overwhelming importance. Within reasonable limits every increase in calories is associated with an increased rate of recovery. If the total caloric intake is low, say less than 2,500 calories per day, supplementary proteins seem to be valuable. With a good caloric intake extra proteins beyond those in the diet itself (about 100 gm. daily) do not appear to be especially useful. But what is a good caloric intake? At present we are only able to be specific with regard to young, moderately active adults who have been starved to something like the extent of our subjects. For such persons in the first few weeks of rehabilitation following serious undernutrition a daily intake of around 2,500 to 3,000 calories seems to be about right. Thereafter for at least some months the daily intake should be of the order of 3,500 to 4,000 calories. At all times, of course, women will need several hundred calories less than men and allowance should be made for body size and for the occupation. Manual laborers will need 1,000 calories or more beyond the needs of workers in light industry.

Supposing the relief diet is fairly good, that is, averaging not less than 3,000 to 3,500 calories, how long will it take before full rehabilitation is achieved? Again our information is confined to young adults who have no disability beyond that produced by the undernutrition. With such persons we may hope for something like 50 per cent restoration in 3 or 4 months and perhaps 70 or 80 per cent in 6 months. Full recovery may take nearly a year but we may hope then that there will be no permanent residues. Children may recover more speedily but the prognosis for older people and those with other disorders may be less favorable. It must be realized that recovery does not take place at the same speed in all functions and characteristics. Depression, apathy, edema and bradycardia are rapidly corrected. Weakness, anemia, fatigue and lack of endurance are more persistent. There is a pronounced tendency to replace wasted muscles with fat and physical reconditioning demands exercise as well as food.

I have provided here only the barest factual outline of the consequences of semistarvation and the problems of subsequent restoration. We can say little about the susceptibility to disease in the starved state and after. A discussion of the important social and political consequences would take us far afield. We can insist, however, that these are world problems of the first magnitude in which we and a very few other favored nations must take the lead. If we have any sense of the common brotherhood of man we must actively demand that every effort be made, now and in the future, to provide adequate and efficient relief. If we have any comprehension of the factors which control world political economy we will insist on these things in the name of national security and responsibility. Last, but not least, we will de-

mand that we and our government labor with intelligence and without respite that never again shall mass starvation visit the earth.

SUMMARY

Effects of an extensive experiment in semistarvation on 32 human volunteers who lived on a European type of famine diet for 6 months and were subsequently studied during rehabilitation on various fixed "relief" diets are reported. Preceding the period of undernutrition there were 3 months of control and standardization studies. The men lived in the Laboratory and maintained a fixed regimen corresponding to light industrial work. A daily intake of slightly more than 3,150 calories was needed for balance in the control period; the famine diet averaged 1,760 calories including 49 gm. of proteins and fairly reasonable amounts of vitamins and minerals.

In semistarvation there developed progressive and severe weakness, depression, fatigue, anemia, bradycardia and edema. There were small effects on coordination, speed, and plasma proteins. There were no adverse effects on vision, hearing or general intellective capacity. The mean weight loss was 37 lb., amounting to 24 per cent of the original body weight. The true weight loss, corrected for edema and hydremia, was about 50 lb., of which fat accounted for about 30 per cent. There were few if any unequivocal signs of vitamin deficiencies.

In rehabilitation it was found that only diets averaging over 2,500 calories daily allowed significant recovery and with the best diet, averaging about 3,500 calories, recovery was only about 50 per cent in 3 months. Full recovery required 8 to 12 months. Extra vitamins and proteins had little apparent effect on the rate or course of recovery.

REFERENCES

(1) KEYS, A.: Experimental human starvation—general and metabolic results of a loss of one-fourth the body weight in 6 months. Federation Proc. 5: 55, 1946.
(2) BROZEK, J.: Changes in specific gravity and body fat under conditions of experimental semistarvation. Federation Proc. 5: 13, 1946.
(3) HENSCHEL, A.: The deterioration of brief endurance work capacity during semistarvation. Federation Proc. 5: 45, 1946.
(4) HENSCHEL, A., AND STURGEON, A. M.: The effect of semistarvation on the emptying of the human stomach. Federation Proc. 5: 45, 1946.
(5) MICKELSEN, O.: The urinary excretion of thiamin, pyramin (the pyrimidine-like component of thiamin) and riboflavin by man in semistarvation. Federation Proc. 5: 73, 1946.
(6) TAYLOR, H. L.: The effect of six months of semistarvation on the maximal oxygen intake. Federation Proc. 5: 104, 1946.
(7) SIMONSON, E.: Electrocardiographic changes in semistarvation. Federation Proc. 5: 95, 1946.
(8) SIMONSON, E., AND BROZEK, J.: Maximum speed of movement as a test of muscle function in different nutritional states. Federation Proc. 5: 96, 1946.
(9) KEYS, A.: Famine edema and the mechanism of its formation. Science 103. In press.

Excerpts from a Talk Given by Samuel Legg

Mr. Legg's first-hand report of his own experiences in the experiment conducted by Dr. Ancel Keys at the University of Minnesota gives a vivid picture of what starvation means to people.—*Office of Information, USDA.*

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In November, 1944, I went out to Minnesota to take part in a nutrition experiment. Actually it was an attempt to determine the minimum basis on which large populations can be brought back from a starving situation. . . .

We did get every kind of psychological test it is possible to devise. In these tests we were asked what seemed to be stupid questions, personal inventories, intelligence tests, and power tests to determine our mental ability. We had all of them and took them over and over again. They probably were fairly valuable because one of the increasingly important aspects of starvation, we have found, was the psychological outlook when we were normal and measuring it again when we weren't, which produced some extremely interesting results. . . .

The psychological aspects of starvation are unbelievable. We went there because we were concerned about people abroad and wanted to do what we could to help those less fortunate than ourselves, and I think we lost that feeling after about two months. At the end of five months of starvation our attitude was "to heck with the people abroad; I am hungry." That was all that was important. The only important thing left was whether I was ever going to get food. I was only interested in myself.

We had to keep answering questions and our whole attitude was introspective. We lost our semblance of humanity and became similar to beasts. I remember seeing a guy on a corner in Minneapolis and I got mad at him because he could go and have something to eat. A couple of days later I saw a kid on a bicycle. My first thought was "how could anybody get that much energy." Then I thought "he is probably going home to supper. I hate him." That is one of the most awful things I know.

When the war ended we were on the way back—on the first month of rehabilitation. We were sitting at the supper when the news came. The end of the war meant a lot to us of course. We talked about it for as long as 20 seconds and then discussion was about what we were going to eat tomorrow. News like that which was so important meant a lot to us, and to think that for only 20 seconds we talked about it and that was all.

What does all that mean?

It comes to this. If you are going to bring people back you must send them tremendous amounts of food. Quality of food is not as important as quantity.

Nutritional Status During Pregnancy and After Delivery of a Group of Women in Mexico City[1]

RICHMOND K. ANDERSON, M.D., WILLIAM D. ROBINSON, M.D., JOSÉ CALVO, M.D., and GEORGE C. PAYNE, M.D.[2]

AN EXAMINATION of the nutritional status of a population group in Mexico City suggested that pregnant and lactating women warranted special attention (1). A study was therefore made of a group of pregnant women of the city both before and after delivery. This report summarizes the results of the study.

The women examined were from the clinics of the Training Station and Health Center of the School of Hygiene and were in the main from the health district of that center. The major portion of the population of this health district lives in the crowded Santa Julia area. The character, economic level and dietary habits of the population of this district have been discussed in the report of a previous nutritional survey of the area (1), and they will not be reviewed further here. Although not among the poorest in the city, the area may be considered typical of the sections inhabited by the economically less favored class of wage earner. A study of the economic status of a portion of these families revealed an average income of 4.31 pesos (value of a peso was about 20 cents) per family per day and 1.20 pesos per individual per day. Considerable inflation due to the war existed at the time of this study.

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The studies and observations on which this report is based were conducted under the auspices and with the support of the International Health Division of The Rockefeller Foundation, in cooperation with the Ministry of Public Health and Welfare of Mexico, and its subdivisions, the National Institute of Nutrition, the School of Hygiene and the Training Center of the School of Hygiene.

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PROCEDURES

The methods used in the investigations here reported were in general the same as those employed in other nutrition studies in Mexico (1, 2). They comprised a physical examination, with special attention to possible signs of nutritional deficiency; a record of dietary intake; and certain laboratory tests. The diet records were limited to 3 days instead of the usual 7, inasmuch as several workers have reported virtually similar results with the two methods. We calculated over 50 diets taken in Mexico City on both a 3 and 7 day basis and found that the average figures for the various nutrients agreed well. In spite of the similar averages, however, it was found that in the individual case certain values, particularly those for vitamins, often differed greatly because of considerable variation in the types of foods eaten on different days. It does not follow, therefore, that the individual intakes calculated from a 3-day record, or for that matter from the customary weekly record may be considered as typical for that particular person.

The tables for the dietary calculations are based in the main on recent analyses of Mexican foods (3). Although the data were obtained from relatively few samples of each food we believe that the error is less than if data from other countries were utilized.

For the laboratory examination approximately 20 cc. of blood were drawn from each individual. Approximately 4 cc. were oxalated with a mixture of potassium and ammonium oxalates and used for hematologic examination. The remainder was utilized for determination of total serum proteins and

albumins (4), serum carotene and vitamin A (5), and ascorbic acid (6).

A total of 101 pregnant women were examined. They were from 15 to 42 years of age, the average being 26 years. In 22 per cent of the cases it was the first pregnancy, the remaining patients varied up to 13 previous pregnancies. Fifty-one of these same women were examined from 1 to 11 months after delivery, the average and median both approximating 5 months. The examinations of pregnant women were made between February and July of 1943 and those following delivery in approximately the same period of 1944. The nutritional status of the 2 groups should therefore not be unduly influenced by variations in food intakes due to season. For practical purposes the women examined after delivery may be considered as lactating, since failure to nurse the baby is rare in this class of women in Mexico. However, 2 were not lactating because their babies had died.

FINDINGS

The dietary and blood findings for the women are presented in Tables 1 to 4. For purposes of comparison similar data obtained for nonpregnant and nonlactating women in the previous nutrition survey are also presented (1). Since these women were from the same area and in general of the same economic status and were examined in the main by the same personnel, we believe they serve as an adequate comparison group.

Blood hemoglobin shows a tendency to drop during pregnancy (Table 1). If one considers the average increase in circulating blood volume as approximately 20–25 per cent (7), the decrease is more than accounted for by the physiological hydremia of pregnancy. The hematologic data, however, must be evaluated in terms of the altitude of Mexico City (approximately 7,500 ft.), there being a difference of about 1 or 2 gm. in the average hemoglobin levels here and at sea level.

Since the dietary intakes of iron on the average exceed even the liberal recommended allowances for pregnancy (Table 4), it is not surprising that an iron deficiency anemia should be rather uncommon. Thus far our nutrition studies in Mexico seem to indicate that iron deficiency is less of a problem than in much of the United States unless the situation is complicated by other diseases. In this group only 3 women with low hemoglobin (10.3, 9.2, 9.7 gm.) and with low blood indices indicating an iron deficiency anemia, were encountered. In the remainder the mean corpuscular volume and mean corpuscular hemoglobin were either normal or tended to be somewhat high.

It will be noted that there is a definite though moderate increase in the mean corpuscular volume during pregnancy. Our average normal values for mean corpuscular volume and mean corpuscular hemoglobin are a little higher than those given by Wintrobe (7) but the mean corpuscular hemoglobin concentration is approximately equal. It is possible that the slight increase in cell size which has been noted in several studies in Mexico (1, 2, 8) can be attributed to the altitude, since several workers, particularly Hurtado (9), have reported a moderate but significant increase at high altitude.

We have no explanation for this increase in cell size in pregnancy. It may be that the added strain of pregnancy augments the altitude factor. Wolff and Limarzi, in a study of blood changes in pregnancy made in Chicago, state that in their cases the cell size tended to remain normal (10). Bethell's values for normal pregnancy are slightly higher than those of the controls, but a very definite increase is noted in what he terms "protein deficiency anemia" (11). Macrocytic anemia of pregnancy is well-known and is apparently particularly common in certain tropical countries (12, 13).

Although our cases cannot be considered anemic,

TABLE 1

Hematologic findings

Stage of Pregnancy	1–3 mo.	4–6 mo.	7–9 mo.	Post-natal	Not pregnant nor lactating
No. of Persons	30	44	27	51	99
Hemoglobin (gm. per 100 cc. blood)	13.9	13.2	13.2	14.3	15.0
Standard error	0.32	0.18	0.24	0.15	0.11
No. of persons with hemoglobin below 12 gm.	2	5	3	2	3
No. of persons with hemoglobin below 10 gm.	1	1	1	0	0
Red blood cell count (millions per cu. mm. blood)	4.21	3.93	3.99	4.63	4.74
Standard error	0.075	0.053	0.072	0.048	0.038
Hematocrit (per cent)	40.5	38.5	39.0	43.5	43.2
Standard error	0.67	0.46	0.61	0.40	0.33
Mean corpuscular volume (cu. micra)	96	98	98	94	92
Standard error	1.3	1.1	1.5	0.57	0.80
Mean corpuscular hemoglobin (micro micrograms)	33	34	33	31	31
Standard error	0.57	0.49	0.60	0.30	0.3
Mean corpuscular hemoglobin concentration (percent)	34	34	34	33	34
Standard error	0.27	0.24	0.22	0.18	0.1

this increase in cell size may be a mild expression of the same factors operating in the macrocytic anemias of pregnancy. This type of anemia is frequently attributed to lack of adequate protein and vitamin B intake (11, 14, 15). Experimentally, macrocytic anemia has been produced by niacin deficiency (16). It will be seen in Table 4 that our cases were moderately low in these factors as compared with the recommended allowances, but probably no more so than other groups studied in the United States and elsewhere. It should be emphasized that this increase in cell size (98 ± 0.74 for the entire pregnant group as compared with 92 ± 0.80 in nonpregnant women) is statistically significant. Since the determinations were made in the same laboratory, with the same equipment employed by the same group of technicians, we are confident that the increase is a real one. In the postnatal period the cell size fell and approached that of the comparison group. Throughout, the mean corpuscular hemoglobin concentration remained normal and constant, indicating well-filled cells and an adequacy of hemoglobin-forming material.

TABLE 2.

Serum proteins in gm. per 100 cc.

Stage of Pregnancy	1–3 mo.	4–6 mo.	7–9 mo.	Post-natal	Not pregnant nor lactating
No. of Subjects	30	44	27	53	117
Total protein (gm. per 100 cc. serum)	7.4	7.1	6.8	7.6	7.7
Standard error	0.11	0.081	0.11	0.089	0.060
Subjects with total proteins below 6.5 gm.	2	3	8	1	3
Subjects with total proteins below 6.0 gm.	0	0	2	0	1
Albumins (gm. per 100 cc. serum)	4.6	4.2	4.0	4.8	4.9
Standard error	0.081	0.046	0.065	0.084	0.039
Subjects with albumin below 4.0 gm.	1	9	14	5	3
Subjects with albumin below 3.5 gm.	0	0	0	0	0

The blood protein values (Table 2) are relatively satisfactory[3] and are in line with the rather good average dietary intakes which lie between the recommended allowances for a nonpregnant and a pregnant woman (Table 4). The drop during pregnancy may be largely but not entirely accounted for by the hydremia of pregnancy since the relative fall in albumins is considerably larger than that in total protein. The chief sources of protein in the Mexican diet aside from animal protein, are corn (eaten as tortillas) and beans. The protein intake was apparently adequate even though the total intake and that of animal protein (27 per cent) were both somewhat below the amount recommended.

[3] Hurtado *et al.* (9) observed an approximately 3 per cent increase (equal to approximately 0.2 gm.) in serum proteins within 3 hours after arrival at an altitude similar to that of Mexico City. The chronic effects of altitude must be determined before our protein values can be compared with those elsewhere.

TABLE 3

Serum vitamin C and vitamin A levels per 100 cc.

Stage of Pregnancy	1–3 mo.	4–6 mo.	7–9 mo.	Post-natal	Not pregnant nor lactating
No. of Subjects	30	44	27	51	116 (Vit. C) 101 (Vit. A)
Vitamin C (mg.)	0.60	0.65	0.52	0.35	0.73
Standard error	0.058	0.064	0.062	0.043	0.029
No. of subjects with vitamin C below 0.6 mg.	17	21	17	40	42
No. of subjects with vitamin C below 0.2 mg.	1	6	3	25	6
No. of subjects with zero vitamin C values	0	1	0	4	2
Vitamin A (I.U.)	96	92	87	106	98
Standard error	6.7	3.2	5.0	3.7	2.5
No. of subjects with vitamin A below 70 I.U.	9	4	7	5	8
No. of subjects with vitamin A below 30 I.U.	0	1	0	0	0
Carotene (micrograms)	145	189	204	169	139
Standard error	10.8	9.0	12.7	6.6	4.5

The blood vitamin C in pregnancy lies somewhat below that of the women in the control group, particularly in late pregnancy (Table 3). A similar finding is reported by Snelling and Jackson (17) and by Teel, Burke, and Draper (18). This is probably a reflection of an increased need for this vitamin. There is a marked drop following delivery, probably due in part at least to the need for vitamin C for the breast milk. A similar drop has been observed by Ingalls, Draper, and Teel (19) and by Neuweiler (20). Very few zero levels and no scurvy was observed in

these women. Compared with the values found in several studies made in the United States, the averages are not particularly low. In general the average Mexican diet appears somewhat better in its vitamin C content than that in the United States (1, 2, 3).

In accord with previous studies (21, 22) blood vitamin A showed a gradual drop as pregnancy advanced (Table 3). The carotene, on the other hand, rose. This has also been reported by Bodansky, Lewis, and Lillienfield (22). We have observed a similar inverse relationship with increasing age in a group whose dietary vitamin A consisted almost entirely of carotene (2). Although several studies have been made on the relationships between carotene and vitamin A of the blood, the causes influencing them are still largely obscure. No cases in our group showed definite signs of clinical vitamin A deficiency. Moderate conjunctival changes were observed with the slit lamp in 52 per cent of the subjects, but we do not believe that these changes are necessarily an index of vitamin A deficiency (23).

Table 4 summarizes the data on the diet studies. Line 1 gives the average intakes for adult women in the previous nutrition study in this area, calculated with food tables based chiefly on analyses of United States foods, since Mexican data were unavailable at that time. The second line gives the average intakes for the pregnant women of this study, again based on the older food tables. The agreement is surprisingly good and indicates that there was little tendency to change dietary habits during pregnancy. The third line gives the results for this pregnant group calculated from newer values based largely on the analyses of Mexican foods. It will be seen that there are several instances in which the values differ, an indication of the error involved when the results of analyses of foods from other regions are used. The lower calcium content is due to finding less calcium in tortillas, from which it is chiefly derived, than was reported previously (24). The calcium content of tortillas undoubtedly varies considerably with the methods of preparation, depending chiefly on the amount of lime used. More analyses must be made before we can properly evaluate Mexican calcium intakes.

TABLE 4

Dietary intakes

	CALORIES	PROTEIN	Fe	Ca	P	VIT. A	THIAMIN	RIBOFLAVIN	NIACIN	VIT. C	NO. DIETS
		gm.	*mg.*	*gm.*	*gm.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*	
Average intake of adult females in area calculated from older tables using chiefly United States data (1)	2,282	72	16.9	1.82	1.16	3,140	1.46	1.44	9.1	36	100
Standard error	54.7	2.0	0.5	0.08	0.02	363	0.05	0.05	0.3	3.0	
Average intake for pregnant women using same tables as above	2,103	67	16.2	1.77		3,256	1.36	1.44	8.3	30	61
Standard error	64.0	2.6	0.7	0.09		385	0.06	0.08	0.4	2.4	
Average intakes for pregnant women using mainly data based on recent analyses of Mexican foods	2,114	71.7	16.3	0.78	1.28	4,750	1.33	1.17	8.6	49	61
Standard error	71.3	2.7	0.7	0.04	0.05	374	0.06	0.07	0.4	5.8	
Per cent of National Research Council allowance recommended for adult women (moderately active)	85	120	136	98		95	111	73	72	70	
Per cent of National Research Council allowance recommended for pregnant women*	85	84	109	52		79	74	47	48	49	

* *Recommended Dietary Allowances Revised, 1945.* Reprint and Circular Series, No. 122, August 1945, National Research Council, Washington, D. C.

A comparison with the recommendations for nonpregnant women indicates that the average intakes of protein, iron, calcium, vitamin A and thiamin are satisfactory. Calories consumed are slightly low, approximating those recommended for a sedentary woman. However, the caloric intakes found here are higher than in several studies in the United States (25, 26, 27). Mexican women tend to be smaller than American women, so their caloric needs are probably less. Weights in general conformed to United States standards and there was a steady gain during pregnancy, averaging 7.3 lb. at the end of the first, 19.2 lb. at the end of the second, and 30.1 lb. at the end of the third trimester. The average ratio of

dietary calories to calculated basal calories was 1.59, rising from an average of 1.51 in the first trimester to 1.70 in the last. Calculation of basal calories from surface area formulas in a pregnant woman is inexact, but these ratios do indicate a reasonable margin of calories for activity. Assuming that in early pregnancy there is no increase in basal calories and that at the end of pregnancy the increase is in the neighborhood of 15–20 per cent (28) there is an average margin of about 50 per cent for activity. It does not seem likely, therefore, that any considerable degree of caloric deficiency existed in these women.

Vitamin A and thiamin intakes are similar to those of the nonpregnant women and are only moderately low when compared with those recommended for pregnant women. The need for thiamin may be increased somewhat by the relatively high carbohydrate diet (66 per cent of total calories).

Riboflavin and niacin intakes are below even the considerably lower values of the new National Research Council recommendations. The incidence of corneal invasion was 34 per cent preceding and 48 per cent following delivery, neither particularly high as compared with previous studies (1, 2). We doubt whether the mild degrees of corneal invasion commonly encountered indicate riboflavin deficiency (29). No cases of angular cheilosis were seen. The need for niacin in Mexico is probably increased by the high corn consumption. There were no cases of true pellagra; glossitis, however, was common, 48 per cent of those examined showing rather marked changes by slit lamp.

Present indications are that deficiency of riboflavin and niacin and probably certain other members of the B complex are among the most important deficiencies in Mexican diets (2, 3). We have made numerous trips to various parts of Mexico in search of pronounced nutritional deficiencies and in the main have been impressed by their absence. However, in nearly all regions visited, cheilosis and glossitis were rather common, and B complex deficiency would seem to be an important factor in their production.

The vitamin C intake of about 50.mg. is low for the conditions of pregnancy and lactation. There were no cases of definite clinical vitamin C deficiency. Thirty-four per cent showed moderate to severe grades of gingivitis by slit lamp, but we believe these were mainly due to poor oral hygiene rather than to ascorbic acid lack.

On physical examination 22 women showed mild edema, but none of these had particularly low blood protein values (total protein averaged 6.8 gm., albumin 4.3 gm.). Thirty-one had calf tenderness, 8 had abnormally dry skin, and 16 had heart murmurs, only one of which, a slight mitral presystolic murmur, was thought to be organic. There were no neurologic abnormalities. The average blood pressure was 114/76 in the first, 113/75 in the second, and 115/78 in the third trimester. In the nutrition examination no women with a systolic blood pressure over 150 or a diastolic one over 100 were encountered. In general it has seemed to us that the incidence of hypertension is considerably less in Mexico than in the United States.

Of the 101 women, 46 complained of photophobia and/or burning eyes, 16 of a painful tongue, 63 of bleeding gums, 30 of anorexia, 28 of palpitation, 56 of muscle pains, aches, or paresthesias, 74 of tiredness and debility, 55 of dizziness, and 33 gave a history of mild edema. We doubt whether any of these symptoms or physical findings can be ascribed in any large part to nutritional failure.

Since the number of pregnant women studied was small and the clinic staff had no responsibility for delivery, no attempt was made to study the influence of nutrition on the course of pregnancy, labor, delivery, or puerperium, or upon fetal or infant condition.

SUMMARY

Findings in a study of nutritional status during and following pregnancy in a group of women from an economically poor area of Mexico City are presented, and these are compared with findings in nonpregnant women in a previous survey in the same area.

The fall in hemoglobin in pregnancy was found to be mild and attributable to hydremia. A mild but we believe definite increase in the size of the red blood cells was observed in pregnancy.

The average blood vitamin C values lay around the lower limits of that usually considered normal, tending to decrease during pregnancy. After delivery there was a definite fall. Vitamin A decreased slightly during pregnancy, while the amount of carotene rose.

Serum protein levels were on the average good and dropped only moderately during pregnancy. The relative fall in albumin was somewhat greater than in total protein.

Diet studies showed that there was little tendency to modify food habits during pregnancy. Caloric intakes were less than the National Research Council recommendations, but were considered adequate. When compared with the amounts recommended for nonpregnant women, riboflavin, niacin, and vitamin C could be considered low. Iron was the only nutrient to reach the higher recommendations made for pregnancy.

Definite clinical signs of deficiency disease were few in this group of women. No attempt was made to determine the effect of nutritional status on the course of pregnancy or delivery.

BIBLIOGRAPHY

(1) Robinson, W. D., Payne, G. C., and Calvo, J.: A study of the nutritional status of a population group in Mexico City. J. Am. Dietet. A. 20: 289, 1944.

(2) ANDERSON, R. K., CALVO, J., SERRANO, C., AND PAYNE, G. C.: A study of the nutritional status and food habits of Otomi Indians in the Mezquital valley of Mexico. In press.
(3) CRAVIOTO, R., LOCKHART, E. E., ANDERSON, R. K., MIRANDA, F., AND HARRIS, R. S.: Composition of typical Mexican foods. J. Nutrition 29: 317, 1945.
(4) ROBINSON, H. W., AND HODGEN, C. G.: Biuret reaction in determination of serum proteins. J. Biol. Chem. 135: 707, 1940.
(5) KIMBLE, M. S.: Photocolorimetric determination of vitamin A and carotene in human plasma. J. Lab. and Clin. Med. 24: 1055, 1939.
(6) MIDLIN, R. L., AND BUTLER, A. M.: Determination of ascorbic acid in plasma: A macromethod and micromethod. J. Biol. Chem. 122: 673, 1938.
(7) WINTROBE, M. M.: Clinical Hematology. Philadelphia: Lea and Febiger, 1942.
(8) GUTIERREZ VILLARREAL, A.: El volumen corpuscular medio. Thesis, Military Medical School, Mexico, D. F., 1942.
(9) HURTADO, A., MERINO, C., AND DELGADO, E.: Influence of anoxemia on the hematopoietic activity. Arch. Int. Med. 75: 284, 1945.
(10) WOLFF, J. R., AND LIMARZI, L. R.: Anemia in pregnancy. J. A. M. A. 128: 482, 1945.
(11) BETHELL, F. H.: The blood changes in normal pregnancy. J. A. M. A. 107: 564, 1936.
(12) MUDALIAR, A. L., AND MENON, M. K. K.: The macrocytic anemia of pregnancy. J. Obstet. Gynaec. Brit. Emp. 49: 284, 1942.
(13) NAPIER, L. E., AND NEAL-EDWARDS, M. I.: Anemia in pregnancy in Calcutta. An analysis of hematological and other data from 529 pregnant women. Indian M. Research Mem. 33: 135, 1941.
(14) WILLS, L.: Studies in pernicious anemia of pregnancy. Part VI. Tropical macrocytic anemia as a deficiency disease, with special reference to the vitamin B complex. Indian J. M. Research 21: 669, 1934.
(15) BETHELL, F. H., BLECHA, E., AND VAN SANT, J. H.: Nutritional inadequacies in pregnancy correlated with the incidence of anemia. J. Am. Dietet. A. 19: 165, 1943.
(16) HANDLER, P., AND FEATHERSTON, W. P.: The biochemical defect in nicotinic acid deficiency. II. On the nature of the anemia. J. Biol. Chem. 151: 395, 1943.
(17) SNELLING, C. E., AND JACKSON, S. H.: Blood studies of vitamin C during pregnancy, birth and early infancy. J. Pediat. 14: 447, 1939.
(18) TEEL, H. M., BURKE, B. S., AND DRAPER, RUTH.: Vitamin C in human pregnancy and lactation: I. Studies during pregnancy. Am. J. Dis. Child. 56: 1004, 1938.
(19) INGALLS, T. H., DRAPER, R., AND TEEL, H. M.: Vitamin C in pregnancy and lactation II. Studies during lactation. Am. J. Dis. Child. 56: 1011, 1938.
(20) NEUWEILER, W.: Ueber die gegenwartige Vitamin-Versorgung der Schwangeren und Wöchnerinnen, Schweiz. med. Wchnschr. 72: 1408, 1942; Chem. Absts. 38: 3010, 1944.
(21) LUND, C. J., AND KIMBLE, M. S.: Vitamin A during pregnancy, labor and puerperium. Am. J. Obst. and Gynec. 46: 486, 1943.
(22) BODANSKY, O., LEWIS, J. M., AND LILLIENFELD, M. C. C.: The concentration of vitamin A in the blood plasma during pregnancy. J. Clin. Investigation 22: 643, 1943.
(23) ANDERSON, R. K., AND MILAM, D. F.: Biomicroscopy of the eyes in evaluation of nutritional status. Conjunctival changes. J. Nutrition 30: 11, 1945.
(24) CRAVIOTO, R. O., ANDERSON, R. K., LOCKHART, E. E., MIRANDA, F. deP., AND HARRIS, R. S.: Nutritive value of the Mexican tortilla. Science 102: 91, 1945.
(25) YOUMANS, J. B., PATTON, E. W., AND KERN, R.: Surveys of the nutrition of populations. Description of the population, general methods and procedures, and the findings in respect to the energy principle (calories) in a rural population in middle Tennessee. Part 2. Am. J. Pub. Health 33: 58, 1943.
(26) MILAM, D. F., AND ANDERSON, R. K.: Nutrition survey of an entire rural county in North Carolina. South. M. J. 37: 597, 1944.
(27) MILAM, D. F., AND DARBY, W. J.: The average diet of a Southern county and its effect on nutritional status. South. M. J. 38: 117, 1945.
(28) MCLESTER, J. S.: Nutrition and Diet in Health and Disease. Philadelphia: Saunders, 4th ed. 1943.
(29) ANDERSON, R. K., AND MILAM, D. F.: Biomicroscopy of the eyes in evaluation of nutritional status. Corneal vascularization. J. Nutrition 30: 17, 1945.

NUTRITION TEAMS

A recent appropriation by Congress will make it possible for the U. S. Public Health Service to expand its activities in the field of nutrition. A nutrition section has been set up in the States Relations Division to give consultation services to the states and to develop nutrition demonstration projects for localities on invitation from a state. The purpose of these demonstration units will be to make general nutritional appraisals of the population and to develop methods and procedures particularly adaptable to health departments. Each of these nutrition teams will include a medical officer, a public health nurse, a nutritionist, and a biochemist. They will be fully equipped with mobile laboratories.—Thomas Parran, Surgeon General, U. S. Public Health Service, Nutrition Reviews 4: 130, 1946.

Adequacy of the Diet During Lactation[1]

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THE food requirements of the mother are known to be increased during the months prior to the birth of her baby and during the nursing period when physiological needs are augmented (1, 2, 3) and while her baby is still wholly or in part dependent upon the functioning of her body for his sustenance. The extent of the increase of maternal physiological needs over and above the normal functioning level seems to be governed in large measure by the nutritional status of the mother prior to and during gestation (4, 5) and by the conditioning factors that may arise during the cycle of reproduction (6).

Recent studies have provided cumulative evidence from numerous lines of approach that there is a close relationship between the amounts and kinds of foods consumed by the mother and the state of her health and that of her baby (7, 8, 9). Moreover, inadequate diets may have more far-reaching consequences than heretofore have been considered (10, 11). The addition of a few simple foods (at a nominal cost) to the usual diets of women in the lower socio-economic groups has paid bountiful dividends to parents and the nation alike. This simple public health measure, experimentally observed in Canada (7) and carried out on a nation-wide scale in Britain (12) before and during the war, not only improved the health of mothers and children but reduced the lost time of the women and the expense of illnesses of both mother and child, thereby contributing to the improvement of the health of the nation (13).

Although a growing interest in the application of the newer nutritional principles to maternal and infant care can be demonstrated, the inadequacy of scientific knowledge of meeting physiological needs during the course of reproduction is recognized. Too few scientific observations have been made in relation to the scope and magnitude of this problem. Investigations directed towards the most satisfactory ways and means of meeting maternal and infant needs through foods are urgent and concern the world at large.

In setting up the *Recommended Dietary Allowances*, the Food and Nutrition Board of the National Research Council found in the scientific literature few quantitative data from controlled studies with which to judge physiological requirements of women during pregnancy, and even less information concerning lactating mothers (14). Consequently, the yardstick formulated for feeding pregnant and nursing women during the world food shortage necessarily was based largely upon opinions. Although the allowances represented the combined judgment of many authorities they were considered tentative, pending accumulation of more accurate information.

During a comprehensive study of the secretion and composition of human milk (15) the diets eaten by women successfully nursing their babies were analyzed to determine the kinds, amounts and proportions of nutriments which will satisfy the appetites of lactating women and provide for adequate nourishment of the bodies of both mother and nursing infant (16). In addition, the data afford an opportunity to compare the calculated nutrient values of a diet, the amounts determined by analysis in the laboratory, and the amounts recommended by the Food and Nutrition Board.

EXPERIMENTAL

The subjects of the investigation were multiparae selected during the first trimester of pregnancy by the obstetrician.[3] The women were chosen on the bases of their medical histories, physical examinations and records of having successfully nursed their other children. Their health was good throughout pregnancy, parturition and recoveries were normal. The infants grew satisfactorily throughout the nursing

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[2] From the Research Laboratory, Children's Fund of Michigan, Detroit.

[3] The subjects were selected by J. P. Pratt, M. D., head of the Department of Obstetrics, Henry Ford Hospital, Detroit, who provided prenatal and obstetric care. Mrs. Annie Lou Wertz, dietitian, Henry Ford Hospital, aided in planning the dietary and securing the food.

period.[4] Details of the control of the studies (15), the menus used and the methods of collection and preparation of the foods for analysis (16) have been published.

Of the 14 women who participated in the investigation, analyses were made of the diets received by 12 mothers during 5-day periods at various intervals following the birth of their infants (Table 1). Ten mothers were studied during 18 five-day periods while they were secreting mature milk. During the 10 days in the hospital following the birth of their babies, the mothers received known diets and duplicate portions of all food eaten were composited for each 5 days and aliquots taken for analysis. The total food intake and the 24-hour collections of urine and milk were analyzed for energy, nitrogen (protein), fat, vitamins and minerals. Under comparable conditions of control and collection, 5-day studies of the same women were also made in their homes at 3, 6 and, if the mother were still nursing her baby, 8 and 10 months postpartum.

TABLE 1

SUBJECTS	DAYS POSTPARTUM AT WHICH LACTATION WOMEN WERE STUDIED						
V. G.	1–5	6–10	78–82	161–165	191	239–243	302–306
V. K.	1–5	6–10	95–99	144–148			
J. M.	1–5	6–10	75–79	173–177			
V. L.	1–5	6–10	68–72	152–156			
B. S.	85–89	204–208	259–263				
V. S.	1–5	6–10	70–74				
M. B.	9	72–76					
L. F.	1–5	6–10					
C. O.	1–5	6–9					
M. S.	7	58–62					
G. S.	7	80–84					
D. M.	45–49						
F. W.	7						
E. L.	8						

The diets were the same, qualitatively, for all of the subjects and consisted of different menus for each of 5 days. In each 5-day period of study the menus were repeated in the same order. Changes necessary owing to variations in the women's appetites were made by increasing or decreasing the amounts of all foods, except milk, in the diets. The foods used in the diets of the mothers are classified in Table 2 according to the 7 Basic Food Groups. The menus were varied and the meals were palatable and attractive. A portion of beef, ham, fish or poultry was served at least once a day, sometimes twice, and liver was served once in each 5-day period. On the average, each woman received 1 egg per day. Orange juice, tomato juice, apple sauce and prunes were the breakfast fruits. Each day's menu included potatoes, lettuce and 2 to 4 other vegetables, many from the green and yellow groups. Four slices of approximately 60 per cent whole wheat bread were served daily. Cooked, whole-grain cereals were given at 3 of the 5 breakfasts; processed, nonenriched products at the other 2. The diets, as eaten, provided daily an average of 1,074 gm. of milk, 104 gm. of 20 per cent cream, 41 gm. of ice cream and 17 gm. of cheese. Ice cream, custard and canned fruits were used for desserts. Each day's diet included about 50 gm. of butter. Coffee, tea and cocoa were not included in the diet.

If a woman did not eat all the food served, the leftovers were weighed and substracted from the intake. The subjects cooperated by eating such foods as could not be weighed back accurately. The composition and preparation of the foods were comparable in all the studies as far as was practical. Canned fruits and vegetables of the same respective lots were used almost exclusively in order to avoid variations and seasonal scarcity. The same personnel prepared and weighed the meals for all the women.

TABLE 2

Distribution of foods used in this study among 7 basic food groups

Group I. *Green and yellow fruits and vegetables:* peas, green and wax beans, asparagus, carrots, spinach, peaches, apricots, parsley.

Group II. *Oranges, tomatoes, grapefruit, cabbages:* oranges, lemons, tomatoes, grapefruit, raspberries, strawberries.

Group III. *Potatoes and other vegetables and fruits:* beets, celery, cherries, apples, pears, corn, prunes, potatoes, plums, lettuce.

Group IV. *Milk and milk products:* milk, cream, cheese, ice cream.

Group V. *Meat (except bacon), poultry, fish, eggs, nuts:* chicken, salmon, egg, beef roast and steak, ham, calves liver, cocoanut, tuna.

Group VI. *Bread, flour and cereal:* whole wheat bread, Pettijohns, enriched flour, Cream of Wheat (enriched), oatmeal, Ralston.

Group VII. *Butter*

Miscellaneous *Energy foods:* sugar, jelly, chili sauce, olives, pickles, mayonnaise, gelatin powder, bacon, marmalade, cocoa, butterscotch pudding powder, chocolate, corn starch, sherbet, bouillon, candy, macaroni, melba toast, corn flakes, puffed rice, bread crumbs.

Appetites were not dependent upon the sizes of the women nor were they constant for the same woman at different times. The women varied in weight from 101 to 203 lb., and while none of the larger women chose the lowest intake, yet one of the middle-sized women ate one-fifth more than the usual diet during 2 home studies. Then, too, while inactive in the hospital, a woman might choose less food, but after her return home her appetite would keep pace with augmented household activities and she would want larger portions. That the portions were adequate was indicated by maintenance of lactation and the health of both mother and child.

ANALYZED, CALCULATED AND RECOMMENDED INTAKES

Table 3 shows the calculated (17, 18, 19, 20, 21, 22) amounts of energy, protein, fat, vitamin A, thiamin,

[4] Medical care for the infants was provided by B. M. Hamil, M.D., pediatrician, Henry Ford Hospital, Detroit.

riboflavin and niacin in each day's food intake of one of the subjects. The diets of other subjects were qualitatively comparable but the level of intake varied by as much as 20 per cent (above or below) of the diet used as an illustration. For the average daily intakes during the 5-day period, the percentages supplied by the foods in each of the 7 Basic Food Groups are shown in Table 4.

In presenting "recommended allowances" the Food and Nutrition Board of the National Research Council stated: "The allowances for adults are given for a man of 70 kg. and a woman of 56 kg. They should be decreased or increased proportionately for smaller or larger persons and for different levels of activity." The recommendations of the Food and Nutrition Board were made with the knowledge that ". . . experimental evidence for human requirements is far from adequate. . . . Undoubtedly, continued research will make further revision of the allowances necessary" (14). With the data obtained in this investigation it is possible to compare the nutriments in the total food intakes of healthy lactating women with the "recommended allowances" for lactating women, and the corresponding "net intakes" of nutriments (total intake minus output in milk) with the allowances recommended for nonpregnant, nonlactating, moderately active women. The values obtained from analyses for energy, protein, fat, vitamin A, carotene, thiamin, riboflavin, niacin, pantothenic acid and biotin in the diets of 12 lactating women during 31 five-day periods are shown in Table 5. The recommended allowances for energy, protein, vitamin A, thiamin, riboflavin and niacin (adjusted to the body weights of the women) are also given in the table.

TABLE 3

*Intake of nutriments for each day of the five-day period**

DAY	ENERGY	PROTEIN	FAT	VITAMIN A	THIAMIN	RIBOFLAVIN	NIACIN
	cal.	*gm.*	*gm.*	*mg.*	*mg.*	*mg.*	*mg.*
1	2,820	109	141	2.1	1.6	3.2	15
2	3,089	110	171	1.9	1.7	2.9	18
3	2,773	118	125	5.8	1.5	3.0	21
4	2,874	98	148	2.9	1.4	2.8	15
5	3,110	114	160	19.6	1.7	4.5	22
Average...	2,933	110	149	6.4	1.6	3.3	18

* Calculated from tables of food composition (17–22).

TABLE 4

*Average daily calculated values for each of the 7 basic food groups**

	EN-ERGY	PRO-TEIN	FAT	VITA-MIN A	THIA-MIN	RIBO-FLAVIN	NIACIN
	%	%	%	%	%	%	%
Group I.....	2.9	3.0	0.3	25.7	6.2	3.4	5.4
Group II.....	4.0	1.8	0.3	3.5	8.3	1.3	4.4
Group III.....	9.4	4.8	2.4	2.5	15.5	5.8	14.6
Group IV.....	37.6	42.0	48.8	12.4	31.0	66.4	6.8
Group V.....	9.3	32.7	9.1	50.0	13.1	16.1	44.6
Group VI.....	12.7	11.4	2.3		23.8	5.8	22.2
Group VII.....	11.9	0.3	25.9	5.5		0.1	0.3
Miscellaneous.....	12.2	4.0	10.9	0.4	2.1	1.1	1.7

*Values are percentages of total intake.

From the data in Table 5 it is evident that the diets which satisfied the appetites of the mothers, and maintained satisfactory nutritional status of their bodies and the bodies of the infants receiving their milk, provided as little as 34 per cent (V. G. and L. F.) thiamin and as much as 290 per cent (J. M.) vitamin A as given in the "recommended allowances." The protein intakes ranged from 63 to 141 per cent of the "recommended allowances," the energy intakes from 58 to 131, thiamin from 34 to 80, riboflavin from 67 to 139, niacin from 43 to 122, and vitamin A from 103 to 290 per cent. Although the data for the individual women show wide variations from the "recommended allowances" adjusted for body weight, the average values correspond well for protein, energy and riboflavin. However, the average thiamin intake was approximately one-half and the niacin intake was four-fifths of the recommendation, but the total vitamin A intake was double the amount advocated.

For comparison with the average analytical values the average daily intakes were calculated from tables of food values. For energy, protein, riboflavin and niacin the calculated values approximate the averages of those obtained by analysis. The calculated intake of thiamin, however, was 1.6 mg.—27 per cent higher than the analytical value. The analytical data represent foods which before reaching the laboratory had undergone the various hazards of marketing, storage, preparation, cooking and serving, wherein losses of vitamins undoubtedly occurred. The calculated values reflect the results of analyses of fresh foods which were not subjected to culinary losses.

The calculated value for vitamin A in the diet was 5.8 mg., a figure far in excess of the value determined for vitamin A (1.4 mg.) plus the amount (1.9 mg.) from carotene, a total of 3.3 mg., which demonstrates the differences between values calculated on the basis of published figures of food composition and values obtained by analysis of duplicates of food eaten. The values obtained by analysis were greater than the allowances recommended by the Food and Nutrition Board, but it is evident that a diet planned to meet only the vitamin A recommendation, using values calculated from the literature, would fall over 40 per cent short of providing the amounts intended. Since published data for pantothenic acid and biotin are not available for all foods, no attempt was made to calculate the amounts of them in the diets.

TABLE 5

Average daily intakes and recommended allowances of nutriments for lactating women*

SUBJECT	PERIOD OF POST-PARTUM STUDY	ENERGY		PROTEIN		FAT	THIAMIN		RIBOFLAVIN		NIACIN		PANTOTHENIC ACID	BIOTIN	VITAMIN A†			
		Average daily intake	Recommended allowance	Average daily intake	Recommended allowance		Average daily intake	Recommended allowance	Average daily intake	Recommended allowance	Average daily intake	Recommended allowance			Vitamin A	Carotene	Total	Recommended allowance
	days	*cal.*	*cal.*	*gm.*	*gm.*	*gm*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*
M. B.	72–76	2,547	2,732	90	91	118	1.1	1.8	2.7	2.7	13	18	6.9	42				
L. F.	1–5	2,850	4,928	104	164	126	1.1	3.3	3.3	4.9	16	33	8.0	58				
	6–10	2,898	4,928	108	164	138	1.1	3.3	3.3	4.9	14	33	7.7	56				
V. G.	1–5	2,475	3,268	98	109	104	0.8	2.2	2.6	3.3	12	22	6.5	63	1.2	5.7	2.8	2.0
	6–10	2,445	3,268	96	109	113	0.7	2.2	2.2	3.3	12	22	6.5	53	1.8	4.4	3.1	2.0
	78–82			108	107		1.4	2.1	3.2	3.2	21	21	7.8	61	1.2	9.2	3.9	2.0
	161–165	2,873	3,161	109	105	122	1.2	2.1	3.2	3.2	17	21	8.6	56	0.8	5.7	2.5	2.0
	239–243	2,925	3,107	107	104	126	1.2	2.1	3.4	3.1	16	21	8.0	70	0.9	5.7	2.6	1.9
	302–306	2,827	3,161	107	105	122	1.4	2.1	3.1	3.2	17	21	7.6	55	1.2	5.5	2.8	2.0
V. K.	1–5	2,403	3,054	87	102	105	0.9	2.0	2.4	3.0	12	20	6.2	47	0.7	4.3	2.0	1.9
	6–10	2,381	3,054	88	102	113	1.0	2.0	2.6	3.0	13	20	6.8	56	0.6	4.6	2.0	1.9
	95–100	2,822	3,375	103	112	121	1.1	2.2	3.0	3.4	14	22	8.6	61	1.2	4.7	2.5	2.1
	144–148	2,806	3,107	104	104	118	1.2	2.1	3.1	3.1	14	21	8.2	43	1.2	7.9	3.5	1.9
V. L.	1–5	3,167	2,571	116	86	142	1.2	1.7	3.2	2.6	17	17	8.2	65	0.8	6.2	2.6	1.6
	6–10	3,365	2,571	121	86	146	1.3	1.7	3.6	2.6	21	17	9.1	65	0.8	6.3	2.7	1.6
	68–73	3,275	3,054	124	102	142	1.5	2.0	3.5	3.0	19	20	9.2	46	1.8	8.1	4.2	1.9
	152–156	3,253	3,000	124	100	139	1.6	2.0	3.5	3.0	18	20	9.4	62	1.7	6.7	3.6	1.9
J. M.	1–5	3,269	2,893	112	96	152	1.2	1.9	3.2	2.9	15	19	7.9	64	1.1	5.9	2.8	1.8
	6–10	3,412	2,893	118	96	150	1.2	1.9	3.3	2.9	18	19	8.9	60	1.1	6.3	3.0	1.8
	75–79	3,225	2,946	121	98	143	1.4	2.0	3.4	2.9	19	20	9.4	52	1.0	8.4	3.5	1.8
	173–177	3,559	3,000	117	100	157	1.6	2.0	3.3	3.0	19	20	8.1	70	3.0	6.9	5.0	1.9
B. S.	85–89	2,762	3,161	110	105	121	1.1	2.1	3.1	3.2	18	21	6.8	44		7.6		
	204–208	2,825	3,107	101	104	113	1.3	2.1	3.3	3.1	17	21	7.1	58	1.9	5.7	3.6	1.9
	259	2,918	3,161	104	105	123	1.2	2.1	3.2	3.2	18	21	8.2	58	0.9	5.2	2.4	2.0
M. S.	58–62	2,735	2,464	104	82	115	1.2	1.6	3.4	2.5	17	16	10.3	67	3.0	4.9	4.4	1.5
G. S.	80–84	2,653	3,428	138	114	118	1.4	2.3	2.9	3.4	19	23	6.7	45				
V. S.	1–5	3,278	3,964	114	132	148	1.3	2.6	3.4	4.0	16	26	9.5	61	2.8	5.9	4.5	2.4
	6–10	3,474	3,964	123	132	159	1.3	2.6	3.2	4.0	18	26	9.4	65	3.0	8.0	5.3	2.4
	70–74	3,350	3,911	124	130	142	1.4	2.6	3.3	3.9	17	26	6.9	58	0.8	7.9	3.1	2.4
D. M.	45–49	2,812	3,214	104	107	127	1.4	2.1										
C. O.	1–5	2,256	3,268	93	109	102	1.0	2.2	3.0	3.3	13	22	6.0	43		8.6		
Number of periods.	31	30	30	31	31	30	31	31	30	30	30	30	30	30	24	26	24	24
Average‡		2,928	3,257	109	108	129	1.2	2.2	3.1	3.2	16	22	7.9	57	1.4	6.4	3.3	1.9
Calculated§		2,948		111		150	1.6		3.3		18						5.8	
Averages during 1st 10 days postpartum		2,898	3,433	106	114	131	1.1	2.3	3.0	3.4	15	23	7.7	58			3.1	2.0
Averages during mature milk production		2,951	3,123	111	104	128	1.3	2.1	3.2	3.1	17	21	8.1	56			3.4	1.9

* Adjusted to body weight.

† Because doubt exists as to the factor best suited for converting micrograms of carotene in food into micrograms of vitamin A, these nutriments have been reported as separate constitutents. Total vitamin A is equal to micrograms of vitamin A plus $\frac{0.75 \times 1.67}{4.3}$ times micrograms of carotene.

‡ Calculations of averages and total vitamin A were made before the values were rounded.

§ Calculated from values in the literature (17).

The women studied were far less active during the first 10 days postpartum than at any later period of lactation. During the puerperium they were relieved of all responsibility for their infants and their own care and rested a major portion of the time. For this reason averages are shown in Table 5 for all

periods within the first 10 days postpartum and for all periods later in lactation.

VITAMIN-CALORIE RELATIONSHIPS

Certain relationships of the vitamins to each other and to the calorie intake are used to express adequacy of diets (14). For nursing mothers the recommended allowance is 0.67 mg. of thiamin per 1000 calories. Analyses of the intakes of the women showed 0.42 mg., while the amount calculated was 0.53 mg. per 1000 calories. For riboflavin, the recommendation is 1 mg. per 1000 calories. The average amount in the diets was slightly higher, 1.07 mg. The recommended ratio of riboflavin to thiamin is 1.5 to 1 for lactating women, but analyses of the diets gave a ratio of 2.5 to 1. The recommended relation of niacin to thiamin is 10 to 1. By analysis it was 13.4 to 1, and it was calculated as 11.8 to 1.

TABLE 6

Heights and weights of lactating women in relation to standards

SUBJECT	INTERVAL POSTPARTUM	HEIGHT	WEIGHT	AVERAGE WEIGHT FOR HEIGHT*	OVER OR UNDER WEIGHT
	days	*cm.*	*kg.*		*%*
M. B.	72–76	168	51	58.2	−12
L. F.	1–5	170	92	60.1	53
	6–10	170	92	60.1	53
V. G.	1–5	155	61	51.4	19
	6–10	155	61	51.4	19
	78–82	155	60	51.4	17
	161–165	155	59	51.4	15
	239–243	155	58	51.4	13
	302–306	155	59	51.4	15
V. K.	1–5	162	57	54.0	6
	6–10	162	57	54.0	6
	95–99	162	63	54.0	17
	144–148	162	58	54.0	7
V. L.	1–5	160	48	53.1	−10
	6–10	160	48	53.1	−10
	68–72	160	57	53.1	7
	152–156	160	56	53.1	5
J. M.	1–5	157	54	52.0	4
	6–10	157	54	52.0	4
	75–79	157	55	52.0	6
	173–177	157	56	52.0	8
B. S.	85–89	161	59	53.6	10
	204–208	161	58	53.6	8
	259–263	161	59	53.6	10
M. S.	58–62	157	46	52.0	−12
G. S.	80–84	165	64	55.9	14
V. S.	1–5	174	74	62.3	19
	6–10	174	74	62.3	19
	70–74	174	73	62.3	17
D. M.	45–49	175	60	62.9	−5
C. O.	1–5	168	61	58.2	5

* McCloy (23).

VOLUNTARY INTAKES VERSUS "RECOMMENDED ALLOWANCES" FOR LACTATION

Table 6 shows the percentages by which the women studied were overweight or underweight in relation to the height-weight standards of McCloy (23). Although the calculations are only approximate, the values show that during 26 of the 5-day periods the subjects were overweight by 4 to 53 per cent of their height-weight standards. If this portion of the body weights was largely adipose tissue it would not increase the requirements for body assentials proportionately. Likewise, the 5 values for 5-day periods in which the subjects' body weights were 5 to 12 per cent lower than the standards do not indicate that the mothers should have had a proportionately lower food intake, for during 3 of the 5 periods the women's (V. L., M. S.) voluntary intakes of protein and calories were far higher than the "recommended allowances" adjusted to weight (Table 5).

CALCULATION OF "NET INTAKE"

During lactation the food eaten by a mother must supply all of the nutriments in the milk secreted as well as those required by her own body. In addition, the food intake must support the production of the milk, i.e., provide the required energy and the losses in conversion, although these demands are only a small part of the increased demands of lactation upon food intake. The "net intakes" of the women in this study have been determined by subtracting the amounts of nutriments found in analyzing their milk from the amounts determined by analysis of their food. Thus, the "net intake" represents, approximately, the quantities which were available for the support of the mothers' bodies. In Table 7 these values are compared with the "recommended allowances" for nonlactating women, adjusted to body weights.

"NET INTAKES" COMPARED WITH "RECOMMENDED ALLOWANCES"

Except for the extremely overweight subject (Table 6) the net protein intakes of the women were well above the recommendations, being more than double during several periods (Table 7). However, in general the calorie intakes were lowest in relation to the "recommended allowances" with excess of body weight over height-weight standards; highest with body weights near or below the standard. In all periods in which the net energy intakes were definitely higher or lower than the recommendations the net thiamin intakes also were higher or lower than the allowances. For all periods, average net intakes of protein, riboflavin, niacin and vitamin A were greater than the "recommended allowances." Energy and thiamin net intakes were 6 and 15 per cent, respectively, below the allowances recom-

mended for nonlactating women. The average daily volume of milk secreted was considerably greater during the first 10 days postpartum than during the allowances recommended for sedentary women than do the intakes during mature milk production with the allowances for moderately active women.

TABLE 7

"Net intake" of nutriments versus "recommended allowances"† for non-lactating women*

SUBJECT	PERIOD OF POST-PARTUM STUDY	MILK SECRETED	ENERGY		PROTEIN		THIAMIN		RIBOFLAVIN		NIACIN		VITAMIN A	
			Net intake	Recommended allowance	Net intake	Recommended allowance	Net intake	Recommended allowance	Net intake	Recommended allowance	Net intake	Recommended allowance	Net intake	Recommended allowance
	days	*ml.*	*cal.*	*cal.*	*cal.*	*gm.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*	*mg.*
M. B.	72–76	718	1,987	2,277	78	55	1.0	1.1	2.4	1.4	12	11		
L. F.	1–5	713	2,344	3,450	89	99	1.1	1.8	3.0	2.5	16	18		
	6–10	1,657	1,722	3,450	76	99	1.0	1.8	2.7	2.5	11	18		
V. G.	1–5	798	1,908	2,288	82	65	0.8	1.2	2.3	1.6	12	12	2.1	1.3
	6–10	1,781	1,181	2,288	65	65	0.6	1.2	1.5	1.6	10	12	1.9	1.3
	78–82	848			97	64	1.2	1.3	2.8	1.7	19	13	3.5	1.2
	161–165	901	2,170	2,634	98	63	1.1	1.3	2.9	1.7	15	13	2.0	1.2
	239–243	681	2,394	2,589	99	62	1.1	1.2	3.1	1.6	14	12	2.2	1.2
	302–306	394	2,520	2,634	103	63	1.3	1.3	2.9	1.7	16	13	2.6	1.2
V. K.	1–5	338	2,163	2,138	81	61	0.9	1.1	2.3	1.5	11	11	1.1	1.2
	6–10	762	1,840	2,138	75	61	0.9	1.1	2.3	1.5	12	11	0.9	1.2
	95–99	647	2,317	2,812	96	68	1.0	1.4	2.8	1.8	12	14	2.0	1.3
	144–148	325	2,552	2,589	100	62	1.2	1.2	3.0	1.6	13	12	3.2	1.2
V. L.	1–5	415	2,872	1,800	108	51					16	9	2.0	1.0
	6–10	1,084	2,596	1,800	100	51	1.3	0.9	3.3	1.3	20	9	1.8	1.0
	68–72	789	2,660	2,545	113	61	1.4	1.2	3.2	1.6	17	12	3.8	1.2
	152–156	680	2,723	2,500	115	60	1.5	1.2	3.3	1.6	17	12	3.3	1.2
J. M.	1–5	684	2,783	2,025	98	58	1.1	1.1	2.9	1.4	15	11	1.9	1.1
	6–10	1,228	2,540	2,025	96	58	1.2	1.1	2.8	1.4	16	11	2.0	1.1
	75–79	708	2,673	2,455	112	59	1.3	1.2	3.1	1.6	18	12	3.1	1.1
	173–177	268	3,350	2,500	113	60	1.6	1.2	3.2	1.6	19	12	4.8	1.2
B. S.	85–89	1,020	1,966	2,634	98	63	0.9	1.3	2.6	1.7	16	13		
	204–208	913	2,113	2,589	90	62	1.2	1.2	2.8	1.6	15	12	3.0	1.2
	259–263	676	2,391	2,634	96	63	1.1	1.3	2.9	1.7	16	13	1.9	1.2
M. S.	58–62	947	1,997	2,054	94	49	1.0	1.0	3.0	1.3	15	10	4.0	1.0
G. S.	80–84	899	1,952	2,857	128	69	1.3	1.4	2.5	1.8	18	14		
V. S.	1–5	363	3,020	2,775	107	79	1.3	1.4	3.2	2.0	16	14	4.0	1.5
	6–10	853	2,868	2,775	105	79	1.2	1.4	2.9	2.0	17	14	4.6	1.5
	70–74	304	3,113	3,259	120	78	1.4	1.6	3.2	2.1	16	16	3.0	1.5
D. M.	45–49	401	2,499	2,678	98	64	1.3	1.3						
C. O.	1–5	354	2,005	2,288			1.0	1.2	2.9	1.6	12	12		
Average		747	2,374	2,516	98	65	1.1	1.3	2.8	1.7	15	12	2.7	1.2
Average during 1st 10 days postpartum		848	2,296	2,403	90	69	1.0	1.3	2.7	1.8	14	12	2.2	1.2
Average during mature milk production		673	2,434	2,602	103	63	1.2	1.2	2.9	1.7	16	12	3.0	1.2

* Food intake minus amount secreted in milk.

† For periods within the first 10 days postpartum the allowances recommended for sedentary women were adjusted to body weight; for periods of mature milk production the allowances for moderately active women were used.

periods of mature milk production. Therefore, the average net intakes were lowered more during the intervals of reduced activity and recovery from delivery than during the intervals of greater activity and mature milk production. However, the net intakes during the puerperium compare better with the

SUMMARY AND CONCLUSIONS

In an investigation of the secretion and composition of human milk, analyses were made of the foods eaten and the milk secreted by 12 multiparae during 31 five-day periods at various intervals postpartum. The mothers were successfully nursing their infants,

were healthy throughout the investigation, and the babies grew and developed satisfactorily while receiving their mothers' milk. The diets were comparable, qualitatively, but quantities were determined by the appetites of the women. By analysis the diets provided averages per day of 2,928 calories, 109 gm. of protein, 129 gm. of fat, 1.2 mg. of thiamin, 3.1 mg. of riboflavin, 16 mg. of niacin, 7.9 mg. of pantothenic acid, 57 mcg. of biotin, and 3.3 mg. of vitamin A (including carotene).

The data obtained by analysis of the voluntary diets were compared with values calculated from the literature and with the allowances recommended for lactating women by the Food and Nutrition Board of the National Research Council, adjusted to the body weights of the women. The daily averages of the values determined for all periods of study compared well with both the calculated values and the recommended allowances for energy, protein, riboflavin, niacin and pantothenic acid. Although the values obtained for thiamin and vitamin A by analysis were comparable with those calculated, they did not conform with the "recommended allowances" of the National Research Council. The thiamin intakes were approximately one-half, but the vitamin A intakes were one and one-half times the recommendations.

In addition, the "net intakes" (amounts in food minus amounts secreted in milk) were compared with the "recommended allowances" for nonlactating women, adjusted to the body weights of the women. The adjusted "recommended allowances" were: 2,516 calories, 65 gm. protein, 1.3 mg. thiamin, 1.7 mg. riboflavin, 12 mg. niacin and 1.2 mg. vitamin A. The "net intakes" based on the analytical values were, respectively: 2,374 calories, 98 gm. protein, 1.1 mg. thiamin, 2.8 mg. riboflavin, 15 mg. niacin and 2.7 mg. vitamin A. The average net intakes during the puerperium were lower than those for the periods of mature milk production, owing to the greater average milk volume produced during the first 10 days postpartum and to the reduced activity.

Recently, Wilder (24) discussed "Misinterpretation and Misuse of the Recommended Dietary Allowances." He stated: ". . . the table has served, as was intended, as a guide for a good dietary planning in civilian life and in the armed services." Wilder clarified the basis upon which the allowances were established and the misinterpretations which have been the source of some of the objections to them. He emphasized that ". . . the only planning that can be countenanced is one that provides enough for all well persons, whether their requirements as related to the average are high or low." The data presented in this paper are further evidence of the adequacy of the allowances recommended for lactating women. They demonstrate that some individuals maintain health on far less than the recommended amounts of nutriments, others require more. While the average values for women whose average weight approximated that used as a base for the recommendations conformed with the allowances, the results show that the "recommended allowances" for lactating women should not be used as standards for feeding individual women or groups whose average weight is considerably over or under the 56 kg. used by the Food and Nutrition Board. From the data given, the variations in the requirement of individual women in relation to the "recommended allowances" is greater during the period of mature milk production than in the puerperium when responsibility and activity are minimal.

REFERENCES

(1) Garry, R. C., and Stiven, H.: A review of recent work in dietary requirements in pregnancy and lactation, with an attempt to assess human requirements. Nutrition Abstr. & Rev. 5: 855, 1936.

(2) Macy, Icie G., and Hunscher, Helen A.: An evaluation of maternal nitrogen and mineral needs during embryonic and infant development. Amer. J. Obst. Gynec. 27: 878, 1934.

(3) Ebbs, J. Harry.: Nutritive requirements in pregnancy and lactation. Handbook of Nutrition, A. M. A., Chicago, 1943.

(4) Hummel, Frances Cope, Hunscher, Helen A., Bates, Mary F., Bonner, Priscilla, and Macy, Icie G.: A consideration of the nutritive state in the metabolism of women during pregnancy. J. Nutrition 13: 263, 1937.

(5) Macy, Icie G.: Principal mineral elements in nutrition. Handbook of Nutrition, A. M. A. Chicago, 1943.

(6) Jolliffe, Norman: Conditioned malnutrition, Handbook of Nutrition, A. M. A., Chicago, 1943.

(7) Ebbs, J. H., Tisdall, F. F., and Scott, W. A.: The influence of prenatal diet on the mother and child. J. Nutrition 22: 515, 1941.

(8) Burke, Bertha S., Beal, V. A., Kirkwood, S. B. and Stuart, H. C.: The influence of nutrition during pregnancy upon the condition of the infant at birth. J. Nutrition 26: 569, 1943.

(9) Burke, Bertha S., Beal, V. A., Kirkwood, S. B., and Stuart, H. C.: Nutrition studies during pregnancy. Amer. J. Obst. Gynec. 46: 38, 1943.

(10) Warkany, J., and Nelson, R. C.: Skeletal abnormalities induced in rats by maternal nutritional deficiency. Histologic studies. Arch. Path. 34: 375, 1942.

(11) Warkany, J., and Schraffenberger, E.: Congenital malformations induced in rats by maternal nutritional deficiency. V. Effects of a purified diet lacking riboflavin. Proc. Soc. Exper. Biol. & Med. 54: 92, 1943.

(12) Balfour, M. I.: Nutritional therapy during pregnancy. Proc. Roy. Soc. Med. (II) 31: 911, 1938.

(13) Balfour, M. I.: Supplementary feeding in pregnancy. Lancet 246: 208, 1944.

(14) Food and Nutrition Board, National Research Council: Recommended Dietary Allowances. Revised 1945. National Research Council Reprint and Circular Series No. 122.

(15) Macy, Icie G., Williams, Harold H., Pratt, J. P., and Hamil, Brenton M.: Human Milk Studies XIX. Implications of breast feeding and their investigation. Am. J. Dis. Child. 70: 135, 1945.

(16) KAUCHER, MILDRED, MOYER, ELSIE Z., RICHARDS, ALLEN J., WILLIAMS, HAROLD H., WERTZ, ANNIE LOU, AND MACY, ICIE G.: Human Mild Studies XX. The diet of lactating women and the collection and preparation of food and human milk for analysis. Am. J. Dis. Child. 70: 142, 1945.

(17) HEWSTON, ELIZABETH M., AND MARSH, ROSEMARY L.: Vitamin values of foods in terms of common measures. U. S. Dept. Agric. Misc. Publication 505, 1942.

(18) CHATFIELD, CHARLOTTE, AND ADAMS, GEORGIAN: Proximate composition of American food materials. U. S. Dept. Agric. Circular 549, 1940.

(19) BOOHER, LELA E., HARTZLER, EVA R., AND HEWSTON, ELIZABETH M.: A compilation of the vitamin values of foods in relation to processing and other variants. U. S. Dept. Agric. Circular 638, 1942.

(20) BOWES, ANNA DEPLANTER, AND CHURCH, CHARLES F.: Food Values of Portions Commonly Used. 4th ed. Philadelphia Child Health Society, Philadelphia, 1942.

(21) HAWLEY, ESTELLE E., AND CARDEN, GRACE: The Art and Sejence of Nutrition. C. V. Mosby Co., St. Louis, 1944.

(22) Tables of Food Composition in Terms of Eleven Nutrients. U. S. Dept. Agric. Misc. Publ. 572, 1945.

(23) MCCLOY, C. H.: Appraising physical status: Methods and norms. University of Iowa Studies, Studies in Child Welfare 15, June 1, 1938.

(24) WILDER, RUSSELL M.: Misinterpretation and misuse of the recommended dietary allowances. Science 101: 285, 1945.

Volume and Composition of Rat Milk Influenced by Diet

The effect of changes in the diet of lactating rats has been studied by observing changes in the composition of the milk and the results on the offspring and the mother. The study showed:

1. An increased protein intake increased the milk yield, but brought about no significant change in the per cent of protein in milk.

2. Use of high calcium diets resulted in a decrease in the volume and per cent of calcium and phosphorus in the milk, with a consequent decrease in the total amount secreted. A high phosphorus intake had no appreciable effect on the milk constituents.

3. A decrease in the intake of yeast brought about a decrease in the volume of milk, the size of the nursing young and caused severe weight loss without changing the composition of the milk.—*Excerpts from The Effect of Changes in Diet on the Composition and Volume of Rat Milk, by Arthur J. Mueller and Warren M. Cox, Jr., J. Nutrition 31: 249, 1946.*

Liberal Infant Feeding[1]

THE DEPARTMENT OF PEDIATRICS OF THE UNIVERSITY OF CHICAGO[2]

THE modern newborn infant commonly enters a way of life which has been planned in detail for him by his parents with the aid of relatives, friends, books and physicians. Based on the scientific study of previous infants, his regimen is forecast with care so that he may achieve normalcy—consume the proper food, in the proper amounts, at the proper times; receive adequate protection from vitamin deficiencies; sleep a requisite length of time, preferably at prescribed hours; be properly warmed, cleansed, and shielded from disease; and above all acquire proper habits and not be spoiled. Parents eager to obtain such benefits for their offspring find no dearth of sources of advice, but may find difficulty in selecting from several authoritative offerings.

During recent years there has been a rising tide of suspicion among pediatricians that the rearing of infants by arbitrarily imposed schedules is not the optimal method of achieving the laudable objectives outlined above. Child psychiatrists in particular have inveighed against regimentation during the early months, finding in the repeated frustrations of infantile appetites and sucking impulses, seeds of the feeding and behavior problems so common among children today. No less important are the effects on the mother. Needless anxiety and resentment may be stimulated by her failure to make the infant conform to a rigid standard of "normal" behavior.

At the University of Chicago Clinics, dissatisfaction with the schedule method of infant feeding has led to a complete revision of the method of instructing mothers. The self-demand plan of infant feeding has been substituted with gratifying results. Its essence is a shift of emphasis. The mother is encouraged to study *her* infant, to learn by trial and error what his individual needs are, and to accede to his requests within certain reasonable limits.

METHOD

The assumption is made that normal infants given ready access to an unlimited supply of suitable nutriment will have sufficient appetite to satisfy their nutritional needs and will not harm themselves by overindulgence. Our experience has shown the assumption to be a valid one providing the qualifications are observed: (a) Premature, abnormal or sick infants may need more didactic attention. (b) The mother must be able and willing to recognize hunger. (c) The available supply of milk must be adequate. (d) The food offered should be of such composition that it will meet the infant's nutritional needs when taken in reasonable volume, and will be innocuous if taken in large quantities. Breast milk, when available, meets these latter requirements. In its absence, we have used simple mixtures of evaporated milk and water *without* added carbohydrate.

No practicable method of handling infants on an individualized basis has yet been worked out for the newborn nurseries. During the immediate postnatal period, infants are fed on the traditional 4-hour schedule. Mothers are encouraged to nurse their infants. When artificial feeding is necessary, unsweetened evaporated milk formula is given.

When the mother is ready to leave the hospital she is given general rather than specific instructions in the feeding of her infant. If the child is breast-fed she is urged to let him set his own schedule of nursing —permitting him to sleep until he evinces hunger, then feeding him promptly. She is urged to watch for evidence in the behavior of the infant to tell her when he has had enough, rather than being committed to any particular length of the nursing period. Thorough "bubbling" before the conclusion of the feeding is urged to ensure that the infant's sense of satisfaction is due to gastric distention with milk and not air. If, after an initial period of adjustment at home, the mother finds that she is nursing her infant more than 7 or 8 times a day, or that individual nursing periods are exceeding 30–40 min. in length, it is suggested that she try offering both breasts at some or all of the nursing periods. If this maneuver is not sufficient to appease the infant's hunger, she is advised to consult her physician about the advisability of supplementary feeding. Mothers are advised against attempts to measure the amount of milk obtained at individual breast feedings. The infant's weekly weight gain and general behavior are regarded as the important criteria of successful nursing.

Mothers whose infants must be artificially fed are

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[2] The ideas expressed in this article evolved from the cooperative efforts of physicians, dietitians and social workers to improve the care of well babies in the Bobs Roberts Memorial Hospital, Chicago. The participants are too numerous to cite, but major contributions were made by Dr. Luiz Barbosa, Dr. Parker Dooley, Mrs. Norma Rubovits, Dr. Paul W. Siever, Dr. Adrian H. Vander Veer and Dr. F. Howell Wright.

instructed to prepare formula of approximately 40 per cent evaporated milk: 60 per cent water and to feed their infants when hungry and in whatever quantity seems to be desired. The amount of milk placed in the bottle for each feeding is regarded as a preliminary estimate of the child's need and not as an obligation to be met at any cost. If the infant has been suitably "bubbled" and still wishes to take only a portion of the bottle, he should not be urged to finish. Conversely, if the whole amount is consumed, he should be offered a second bottle in order to be sure that his hunger is fully appeased. As with breast-fed infants, general behavior and weekly weight gain are to be regarded as the major criteria of adequate feeding.

Similar principles govern the feeding of infants by breast and bottle combined. The breast is offered first, then the bottle feeding is offered as insurance that the appetite has been satisfied.

Satisfaction of nocturnal demands for food is implicit in the method. Nursing mothers who find it convenient to have a night bottle given by someone else may enhance their breast supply by sleeping without interruption. Infants who sleep through the whole evening and awaken after midnight present a minor vexation. An exception to the general rule of not waking infants for feeding is permitted in this instance, but the mothers are warned that some such infants even if wakened and fed at the parents' bedtime will still demand food in the early morning hours.

Vitamins C and D are added to the diet during the first few weeks. Introduction of nonmilk foods is generally begun about the age of 2 months and is regulated by individual appetite and acceptance.

Although the traditional carbohydrate supplement is omitted from formulas primarily to avoid fermentative diarrhea from excessive ingestion of sugar, the practice has additional advantages. The percentage of calories derived from protein becomes larger as that for the calories derived from carbohydrate is reduced. This favors the development of sturdier infants and decreases the tendency toward excessive fat deposition. The acquisition of a "sweet tooth" is delayed and infants accept unsweetened foods with better grace. Finally, the preparation of formula becomes extremely simple since the mother can pour the necessary amounts of evaporated milk and boiled water into a sterilized bottle and simply mix by shaking.

RESULTS

Frequency of feeding. Most infants elect to feed 5 or 6 times during the 24-hr. period. An occasional large infant will be satisfied with 4 feedings even during the first month. Frequencies of 7 and 8 times per day are not uncommon particularly among small, immature or hypertonic infants. Usually the feedings are not equally spaced, a reasonable interval obtaining except during the late afternoon and early evening when the demand for food sometimes appears to be continuous. Instances in which more than 8 feedings per day are required for periods in excess of a week or so, are uncommon and almost always prove to be due to special circumstances such as disease or abnormality of the infant, errors in the technique of feeding, or unusual maternal anxiety.

Food consumption. Infants fed on breast milk under any scheme receive an undetermined amount of food. Those infants receiving evaporated milk formulas solely, take amounts ranging from 16 oz. (270–340 calories) to 36 oz. (600–760 calories) per day. Normal healthy infants will seldom consume less than 90 calories per kilogram of body weight per day. Consumptions of over 160 calories per kilogram are seen occasionally during growth spurts. Such spurts are never obvious in the beginning, and the true explanation for unusual food demands becomes obvious weeks or months later when the rate of increase in weight and length is examined critically. The consumption of food in excess of the theoretic maximum of 125 calories per kilogram of body weight per day has not been attended by serious gastro-intestinal disturbances in our experience. Some infants are unable to retain the large volumes consumed and regurgitate some of the excess. Passage of 4–6 stools per day of normal consistency is not uncommon but diarrhea has not been observed.

Growth and development. No comparative study of the records of infants raised on the schedule and on the self-demand regimes has been attempted. It is the general impression that we are seeing larger and sturdier infants than we were a few years ago. Few infants fail to double their birth weights by 5 months, yet excessively fat and flabby infants are not common. Physical achievement of ability to sit, crawl and walk progresses at an average rate.

General behavior. The most important benefit derived has been a marked reduction in the amount of fussing, crying and general unhappiness among infants whose mothers have been able and willing to let them set their own schedules. Placid infants present no problem under any system. Infants with voracious appetites will frequently gorge themselves for a few weeks until convinced that the supply is unlimited and then taper off to a more normal intake. Hypertonic infants are always difficult to pacify. As far as one can judge from the mother's account, the liberal use of food seems to be as satisfactory as any agent.

Difficulties encountered:

Maternal acceptance. The most frequent source of difficulty was encountered in convincing the mothers of first infants that the scheme was either permissible or desirable. Noteworthy was the contrastingly avid manner in which women who had raised a previous infant accepted the plan. During group instruction of mothers ready to leave the Lying-in Hospital it has been usual to find the experienced

mothers in complete accord with the self-demand schedule and enthusiastically urging it upon the reluctant new mothers. Several factors appear to be responsible for the desire of the neophytes for specific instructions.

Women in general are today receiving longer periods of schooling (learning almost anything except motherhood), and are frequently training themselves in professions or self-supporting jobs as a prelude to parenthood. There follows a general increase in the age at which women bear their first babies, and the older the mother the greater her difficulty in reorganizing her way of life to suit the demands of the intruding infant. The effect of advanced schooling, professional training or business efficiency is frequently a liability to the woman who deserts her career for parenthood. Too often her training stimulates a search for specific authoritative instructions in the care of her infant, which will be adequate as long as the infant follows the book, but can be very damaging to a young individualist and his mother. Increasing familiarity with complex machines may lead parents to adopt a mechanical view of their infants and to search out a concise manual of instructions. If the infant fails to respond to his theoretical requirements, the suspicion may arise that he is defective in some respect.

Mothers frequently voice the fear that their own activities will be unduly restricted by an infant without a definite schedule. There are two answers to this objection. First, that almost every infant will shortly work out an individual schedule for himself which will repeat itself quite regularly from day to day; and second, that in the absence of a nurse or other alternate, every mother's activity is severely restricted during the first few months. Fear that a lack of standard regularity will prevent the infant from ultimately acquiring desirable habits is another common objection. Here the mother who is planning to impose adult behavior on her child at an early age reveals herself. Finally, the force of contrary opinion from relatives, friends and even casual acquaintances is often an important hindrance to free acceptance of individualized handling of infants.

Excessive frequency of feeding. In some instances the mother reports that even after the initial period of adjustment at home, the infant appears to demand very frequent feeding throughout the day and night. Usually a careful analysis of his behavior will disclose that some of his crying is due to causes other than hunger, or that incomplete "bubbling" prevents adequate filling of his stomach. Occasionally it is necessary to increase the caloric concentration of the formula because the infant cannot hold a large enough volume to appease his hunger.

Limited intelligence of the mother. Contrary to our original expectation, a self-demand schedule actually is easier to use with mothers of low intelligence. If an innocuous formula or breast milk is to be fed, the mother can be instructed to feed as often as the infant wishes (after all, this is exactly what primitive peoples have done for centuries). The sole danger is that the mother may ignore the infant's crying and give him insufficient food.

Overnourished infants. It might be expected that infants whose appetite was not checked in any way would become excessively fat. Although we have no comparative measurements upon which to base our impression, we have not felt a need to reduce the intakes of any of our infants because of impending obesity. Some infants become rather fat during the first half year, but rapidly exchange this fat for muscle during the following year.

Advantages for the infant:

Preservation and encouragement of his instinctive appetite for food. Eating is more likely to become a pleasant experience when his hunger sensations are followed quickly by gratification than when they are frustrated.

Early recognition of unusual caloric needs. The rapidly growing infant has a chance to get the extra food he needs and the slowly growing mite is not forced to accept superfluous quantities.

Better psychologic adjustment. The mother who learns to study the infant's need for food soon extends her observations expertly to other phases of his behavior and tries to supply the necessary satisfaction. Happy, well-satisfied infants almost invariably thrive on the nutritional level.

Advantages for the mother:

The mother benefits from all the advantages derived by the infant.

There is an avoidance of the anxiety which may arise when an infant fails to agree with didactically imposed regulation. The mother becomes worried, then annoyed and frustrated. She may then engage in a series of tussles with the infant, trying to make him conform.

The mother obtains more rest through the elimination of prolonged and unnecessary crying.

The mother has more real sense of participation in the study of and planning for the infant. If the doctor is providing rigid rules, the mother may feel more like an agent than the chief participant in the infant's rearing.

Advantages for the physician:

The physician profits from anything that benefits mother or infant. He improves his relation with the mother by insisting that he remain as an adviser in her study of the infant. Too often, by implication or otherwise, complete dependence upon the letter of his instructions is fostered with the result that the mother has great difficulty in reaching any decisions by herself. In the scheme presented above, responsibility for study, decisions and experimentation is primarily the mother's—where it ought to be.

Vitamin Content of Frozen Peas, Green Beans and Lima Beans, and Market-Fresh Yams Prepared in a Navy Mess Hall[1]

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THE thiamin, riboflavin and ascorbic acid retentions in two frozen vegetables prepared in large quantities under controlled conditions of cooking and holding were reported in a previous paper (1). This paper presents data on the vitamin content of three frozen vegetables—peas, green beans and Lima beans—and one market-fresh vegetable, yams,[2] prepared in the Navy mess hall at Cornell University.

METHODS OF PREPARATION AND SERVICE OF VEGETABLES

At the time this study was made (January to April inclusive, 1944) about 2500 members of the Navy and Marine Corps were being fed at the mess hall. The service was cafeteria-style with a "no choice" menu. There were four service units. From these units the help was served half an hour, and the "watch" a quarter of an hour prior to the commencement of the regular service period. About one hour was required to serve the rest of the men.

The frozen vegetables were usually cooked in two or three lots of from 100 to 350 lb. each. Each lot was cooked in water in an 80 or a 100-gal. stainless steel, steam-jacketed kettle, and held in its own cooking water in the kettle until served. As needed for service, portions of the cooked vegetable were lifted from the kettle in a conical aluminum strainer of about 3-qt. capacity, allowed to drain for about 15 seconds, then dropped into a deep steam table pan and taken immediately to the steam table.

The yams were peeled and eyed on the afternoon of the day before they were to be served, then held in cold tap water in galvanized iron cans of about 30-gal. capacity in the vegetable preparation room. Sometimes the soaking water was changed for fresh cold tap water at about 6 p.m. On the next day, just before cooking, the yams were removed from the water, placed in perforated steamer pans (about 35 lb. in each pan), and cooked in 3-compartment steamers.

For mashing, the contents of two or three of the steamer pans were dumped into the bowl of a Hobart mixer, hot milk, butter and margarine added, and the whole stirred 2 to 5 min. at slow speed until a fairly uniform mixture was obtained. The mashed yams were then transferred to a steam table pan and taken directly to the steam table.

Although the methods of cooking and of holding prior to serving the vegetables were basically as outlined above, considerable variation existed in the details of the procedures for each lot of vegetables.

SAMPLING PROCEDURES

Methods designed to secure representative samples of each lot of vegetables and of cooking water were used.

Frozen Vegetables. Random samples were taken at four stages: raw, frozen; just cooked; at start of service; at end of service. Occasionally the second and third samples were identical because the vegetables were served as soon as cooked. The last two samples were the so-called "held" vegetables.

Two samples of cooking water were taken from each lot: when the vegetable was just cooked and immediately before the last portion of vegetable was taken to the steam table.

Variation in the number of samples can be noted by inspection of Tables 1–3.

Market-Fresh Yams. In general, four random

[1] This work was part of the National Cooperative Experiment Station Project "Conservation of the Nutritive Value of Food."

[2] The market designation for yellow sweet potatoes, usually of the Puerto Rico variety. This term is retained throughout this paper in preference to the more accurate scientific one.

TABLE 1

Thiamin, riboflavin and ascorbic acid in frozen green peas cooked at the Navy mess hall

LOT NO.	WEIGHT OF VEGETABLE (APPROXIMATE)	TIME		THIAMIN			RIBOFLAVIN			ASCORBIC ACID		
		Cooked*	Held after cooking	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**
	lb.	*min.*	*min.*	*mg./100 gm.*		%	*mg./100 gm.*		%	*mg./100 gm.*		%
1	—	15	0	.35	.23	66	.078	.071	91	7.7	5.2	68
			32		.17	47		.079	102		4.1	54
			92		.16	45		.077	99		4.1	54
5	350	25	0	.29	.22	78	.10	.082	78	14	8.0	58
			65		.18	62		.067	64		6.4	47
			95		.18	62		.074	70		6.4	47
6	216	47	0	.31	.24	78	.098	.078	80	15	9.5	63
			53		.20	64		.074	76		7.3	48
8	312	48	0	.31	.24	78	.098	.082	84	15	8.3	55
			25		.23	76		.072	73		7.7	51
			47		.23	73		.069	71		7.7	51
4	—	55	0	.29	.20	69	.10	.072	69	14	5.3	38
			35		.19	66		.073	70		5.1	37
			55		.19	65		.068	64		5.8	42
3	—	60	0	.35	.26	75	.078	.071	92	7.7	5.7	75
			100		.18	51		.081	104		4.8	63
7	292	93	0	.30	.24	79	.098	.074	75	15	9.2	62
			23		.24	79		.067	68		7.8	53
			53		.24	78		.076	77		7.7	52
2	—	129	0	.35	.33	95	.078	.079	101	7.7	7.0	92
			24		.20	58		.068	87		4.6	60

* Minutes between the time each lot of peas was put in the kettle and the time when it was considered done.

** Calculated on the basis that the content of the raw frozen peas (moist basis) was 100 per cent.

TABLE 2

Thiamin, riboflavin and ascorbic acid in frozen green beans cooked at the Navy mess hall

LOT NO.	WEIGHT OF VEGETABLE (APPROXIMATE)	TIME		THIAMIN			RIBOFLAVIN			ASCORBIC ACID		
		Cooked*	Held after cooking	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**
	lb.	*min.*	*min.*	*mg./100 gm.*		%	*mg./100 gm.*		%	*mg./100 gm.*		%
6	110	18	0	.080	.062	77	.12	.10	83	17	7.4	44
			13		.060	74		.094	76		6.2	37
1	—	22	0	.081	.058	71	.092	.049	54	7.2	7.1	98
			85		.050	62		.050	54		1.1	15
			95		.048	58		.048	52		1.1	15
2	—	60	0	.081	.065	80	.092	.053	58	7.2	0.93	13
			100		.056	69		.052	57		2.0	27
			120		.054	66		.059	64		1.3	18
4	150	61	0	.095	.064	68	.089	.058	66	4.0	2.0	52
			32		.046	49		.042	47		1.3	33
5	160	100	0	.088	.049	56	.10	.067	64	10	3.6	35
			12		.039	44		.054	51		3.3	32
3	—	140	0	.081	.048	59	.092	.044	48	7.2	0.59	8
			48		.038	46		.036	39		0.42	6
			70		.040	49		.032	34		0.25	3

* Minutes between the time each lot of beans was put in the kettle and the time when it was considered done.

** Calculated on the basis that the content of the raw frozen beans (moist basis) was 100 per cent.

samples were taken for each lot of yams: freshly peeled and eyed; soaked, just before steaming; steamed, just before mashing; mashed yams. Occasionally it was possible to secure a sample of the yams immediately after they were done. Variations from the general sampling procedure may be noted in Table 4.

VITAMIN DETERMINATIONS

Chemical methods were used for the determination of thiamin, riboflavin and ascorbic acid as described in the previous paper (1).

content during the different preparation procedures.

The thiamin content of 100 gm. uncooked frozen green peas was .29 to .35 mg.; cooked peas, .20 to .33 mg.; and peas held after cooking, .16 to .24 mg. These thiamin values are lower than the corresponding values for the peas cooked under controlled conditions. The apparent percentage retentions in the peas cooked at the Navy mess hall, about 70 per cent, are similar to those in the peas cooked under controlled conditions.

The thiamin found in the cooking water was .070 to .19 mg. per 100 gm.

TABLE 3

Thiamin, riboflavin and ascorbic acid in frozen Lima beans cooked at the Navy mess hall

LOT NO.	WEIGHT OF VEGETABLE (APPROXIMATE)	TIME		THIAMIN			RIBOFLAVIN			ASCORBIC ACID		
		Cooked*	Held after cooking	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**	Frozen	Cooked	Apparent retention**
	lb.	*min.*	*min.*	*mg./100 gm.*		%	*mg./100 gm.*		%	*mg./100 gm.*		%
5	—	14	0	.11	.060	56	.062	.037	59	19	13	67
			36		.049	46		.030	48		9.2	49
			45		.048	44		.039	63		7.3	39
8	100	30	0	.11	.093	82	.060	.053	89	15	11	76
			15		.089	78		.047	78		9.7	66
6	270	35	0	.13	.078	60	.061	.045	74	13	6.9	52
			45		.072	55		.040	65		6.4	48
4	—	36	0	.11	.065	60	.062	.045	73	19	12	64
			16		.069	64		.042	67		12	65
			64		.067	62		.043	69		12	63
1	150	50	0	.14	.099	71	.062	.046	75	15	10	70
			55		.087	63		.044	71		7.8	52
7	275	52	0	.12	.075	61	.061	.044	73	14	8.4	60
			15		.071	58		.040	67		7.0	50
			55		.064	52		.039	64		6.5	47
2	150	80	0	.14	.10	72	.062	.048	78	15	11	74
3	—	81	0	.11	.072	67	.062	.045	73	19	12	62
			33		.068	63		.043	70		12	65

* Minutes between the time each lot of Lima beans was put in the kettle and the time when it was considered done.

** Calculated on the basis that the content of the raw frozen beans (moist basis) was 100 per cent.

DISCUSSION OF RESULTS

The results of this study are given in Tables 1–4. The data for the vitamin content of the vegetables as they were taken to the steam table, probably of most importance, have been summarized in Table 5.

Exact retentions of the three vitamins in the cooked, held and mashed vegetables could not be calculated because it was impossible to obtain a record of weight changes for any of them. Values for "apparent retentions" were calculated on the basis that the content in milligrams per 100 gm. raw frozen vegetable was 100 per cent. This assumes that there was no change in weight and moisture

The riboflavin content of 100 gm. uncooked frozen green peas was .078 to .10 mg.; cooked peas, .071 to .082 mg.; and peas held after cooking, .067 to .081 mg. The riboflavin values were similar to the corresponding values for the peas cooked under controlled conditions. The apparent retentions, about 80 per cent, were similar to those in the peas cooked under controlled conditions.

The riboflavin found in the cooking water was .038 to .078 mg. per 100 gm.

The ascorbic acid found in 100 gm. uncooked frozen peas was 7.7 to 15 mg.; cooked peas, 5.2 to 9.5 mg.; and peas held after cooking, 4.1 to 7.8 mg.

TABLE 4

Thiamin, riboflavin and ascorbic acid in market-fresh yams cooked at the Navy mess hall

LOT NO.	TIME				THIAMIN					RIBOFLAVIN					ASCORBIC ACID				
	Soaked	Steamed	Held after steaming	Mashed**	Raw*	Soaked	Steamed	Mashed**	Apparent retention†	Raw*	Soaked	Steamed	Mashed**	Apparent retention†	Raw*	Soaked	Steamed	Mashed**	Apparent retention†
	hr.	*min.*	*min.*	*min.*	*mg./100 gm.*				%	*mg./100 gm.*				%	*mg./100 gm.*				%
1	24				.087	.091			105	.052	.055			106	33	28			84
		25	10				.080		93			.051		97			33		98
				5				.085	97				.071	137				26	79
2	25				.098	.082			83	.068	.062			90	22	10			45
	25					.092			93		.057			84		16			74
		35	3				.076		78			.050		74			22		100
				2				.070	71				.064	93				20	92
3	25				.098	.082			83	.068	.062			90	22	10			45
	25					.092			93		.057			84		16			74
		35	9				.081		82			.048		71			20		87
				2				.067	68				.065	96				20	90
5	18				.083	.073			88	.060	.053			89	18	13			74
		50	0				.070		84			.049		81			17		98
			30				.057		69			.049		81			11		65
6	18				.075	.070			93	.056	.053			94	16	11			69
		50	0				.056		74			.054		96			21		138
			25				.066		87			.052		93			16		106
7	18				.075	.070			93	.056	.053			94	16	11			69
		50	0				.070		93			.057		102			22		139
			28				.068		91			.053		94			18		118
4	25				.098	.082			83	.068	.062			90	22	10			45
	25					.092			93		.057			84		16			74
		64	0				.069		70			.065		96			23		104
				2				.062‡	63				.075‡	110				20‡	89

* Peeled and eyed.

** Milk, butter and margarine were added during mashing. It was impossible to obtain a record of the proportion of milk, butter and margarine to cooked yams. For lot 1, the thiamin in the milk was .047 mg., and the riboflavin was .21 mg./100 gm.; for lots 2, 3 and 4, the thiamin in the milk was .041 mg., the riboflavin .17 mg., and the asocrbic acid 1.2 mg./100 gm. No analyses were made of the butter and margarine.

† Calculated on the basis that the content of the raw peeled and eyed yams (moist basis) was 100 per cent. It was impossible to obtain total weight of yams at any of the steps in preparation and cooking procedures.

‡ This lot was held in the kitchen 32 min. after mashing. At that time the thiamin was found to be .058 mg., riboflavin .068 mg., and ascorbic acid 18 mg./100 gm. Apparent retentions were: thiamin 59%, riboflavin 100%, and ascorbic acid 81%.

TABLE 5

Thiamin, riboflavin and ascorbic acid content of 100-gm. servings of three frozen and one market-fresh vegetable as served at the Navy mess hall

VEGETABLE	NUMBER OF REPLICATIONS	THIAMIN		RIBOFLAVIN		ASCORBIC ACID	
		Average	Range	Average	Range	Average	Range
		mg./100 gm.		*mg./100 gm.*		*mg./100 gm.*	
Frozen green peas	14	.20	.16 –.24	.073	.067–.081	6.4	4.1 – 9.5
Frozen green beans	12	.050	.038–.064	.058	.032–.10	2.5	0.25– 7.4
Frozen Lima beans	13	.072	.048–.099	.042	.030–.047	9.2	6.4 –12
Market-fresh yams, served unmashed	3	.064	.057–.068	.051	.049–.053	15	11 –18
Market-fresh yams, served mashed	5	.068	.058–.085	.069	.064–.075	21	20 –26

The ascorbic acid values for the uncooked and the cooked peas were similar to the corresponding values for the peas cooked under controlled conditions. The apparent percentage retentions, about 64 per cent, were also similar. After holding, the peas cooked at the Navy mess hall showed a higher apparent retention, 51 per cent, than did those cooked and held under controlled conditions (34 per cent).

The ascorbic acid found in the cooking water was 1.0 to 9.2 mg. per 100 gm.

The thiamin content of 100 gm. uncooked frozen green beans was .081 to .095 mg.; cooked beans, .048 to .065 mg.; and beans held after cooking, .038 to .060 mg. These values are more than double the corresponding ones reported earlier (1). The beans at the Navy mess hall were more mature than those used in the earlier study and this may account for the difference (2). The apparent retentions, about 60 per cent, were similar to those in the peas cooked under controlled conditions.

The concentration of thiamin in the cooking water was .023 to .055 mg. per 100 gm.

The riboflavin content of 100 gm. uncooked frozen green beans was .089 to .12 mg.; cooked beans, .044 to .10 mg.; and beans held after cooking, .032 to .094 mg. These values are about the same as the corresponding ones for the beans cooked under controlled conditions. The retention of riboflavin in the beans cooked at the Navy mess hall, about 60 per cent, was a little less than that in the beans cooked under controlled conditions (64 per cent).

The riboflavin found in the cooking water was .028 to .081 mg. per 100 gm.

The ascorbic acid found in 100 gm. uncooked frozen green beans was 4.0 to 17 mg.; cooked beans, .59 to 7.4 mg.; and beans held after cooking, .25 to 6.2 mg. The values for the uncooked beans at the Navy mess hall were slightly higher than the corresponding ones for the beans cooked under controlled conditions. The values for the cooked beans were similar in both studies. The beans cooked and held at the Navy mess hall apparently retained somewhat less, about 42 per cent, than those cooked under controlled conditions (60 per cent).

The ascorbic acid found in the cooking water was .22 to 5.2 mg. per 100 gm.

The thiamin found in 100 gm. uncooked frozen Lima beans was .11 to .14 mg.; cooked Lima beans, .060 to .10 mg.; and beans held after cooking, .048 to .089 mg. The concentration of thiamin in the cooking water was .035 to .12 mg. per 100 gm.

The riboflavin found in 100 gm. uncooked frozen Lima beans was .060 to .062 mg.; cooked Lima beans, .037 to .053 mg.; and beans held after cooking, .030 to .047 mg. The concentration of riboflavin found in the cooking water was .010 to .058 mg. per 100 gm.

The ascorbic acid found in 100 gm. uncooked frozen Lima beans was 13 to 19 mg.; of the cooked Lima beans, 6.9 to 13 mg.; beans held after cooking, 6.4 to 12 mg. The ascorbic acid found in the cooking water was 4.3 to 15 mg. per 100 gm.

The apparent retentions of these three vitamins in the cooked Lima beans were similar to those in the cooked peas from the Navy mess hall, possibly because of the similarity in structure of the two vegetables.

The thiamin found in the market-fresh, peeled and eyed yams was .075 to .098 mg. per 100 gm.; after soaking, .070 to .092 mg.; steamed, .056 to .081 mg.; and mashed, .062 to .085 mg.

Corresponding values for riboflavin were: uncooked yams, .052 to .068 mg.; soaked, .053 to .062 mg.; steamed, .048 to .065 mg.; and mashed, .065 to .075 mg. per 100 gm.

Thiamin and riboflavin values for the uncooked yams were about the same as those reported for Irish and sweet potatoes (3, 4).

The apparent retentions indicate that the yams suffered little if any loss of these two vitamins during soaking, cooking and mashing.

The ascorbic acid found in the market-fresh, peeled and eyed yams was 16 to 33 mg. per 100 gm.; soaked for 18 to 25 hr., 10 to 28 mg.; steamed, 11 to 33 mg.; and mashed, 20 to 26 mg.

Ascorbic acid values for the uncooked yams are in the higher range of the values for Irish and sweet potatoes as reported by Booher *et al.* (3) and much higher than the values reported by Clouse (4).

The data indicate an apparent loss of ascorbic acid during soaking. Most of this was apparently regained during steaming and some of that gained was again lost during mashing. The apparent large loss from the soaked yams probably was due to pronounced changes in moisture and dry matter content during the soaking.

SUMMARY

Thiamin, riboflavin and ascorbic acid were determined in frozen peas, frozen green beans, frozen Lima beans and market-fresh yams before and after several methods of large-scale cooking and holding procedures as carried out in the Navy mess hall.

The concentration of these three vitamins in the vegetables after cooking and after holding covered a wide range, probably because of the wide variation in details of the cooking procedures.

In general, for the frozen vegetables the concentration of the three vitamins *in each lot* of cooked vegetable decreased with increase in the length of holding period.

The concentration of thiamin and of riboflavin in the yams apparently did not change during soaking,

cooking, holding and mashing. The concentration of ascorbic acid in the yams apparently decreased during soaking, increased during cooking, and then decreased again during mashing.

REFERENCES

(1) Briant, A. M., MacKenzie, V. E., and Fenton, F.: Thiamin, riboflavin and ascorbic acid retention in frozen peas and frozen green beans in large-scale food service. In press.

(2) Phillips, M. G., and Fenton, F.: Effects of home freezing and cooking on snap beans: thiamin, riboflavin, ascorbic acid. J. Home Econ. 37: 164, 1945.

(3) Booher, L. E., Hartzler, E. R., and Hewston, E. M.: A compilation of the vitamin values of foods in relation to processing and other variants. USDA Circ. No. 638, May 1942.

(4) Clouse, R. C.: Compilation of recent data on mineral and vitamin values of foods. J. Am. Dietet. A. 19: 496, 746, 1943.

Emergency Meeting of Food and Agricultural Organization

THREE WORKING COMMITTEES of the emergency meetings called by the United Nations Food and Agricultural Organization during May prepared the following proposals for the acceptance of the full conference:

The formation of an international intelligence service for food, which will keep the world situation continually under survey and will report quarterly on conditions throughout the world.

Organization of an international emergency food council, directed by international personnel. Its function would be to "consider, investigate, inquire into, and formulate" plans for the distribution and allocation of the world's food resources. This council would be composed of all major exporting and importing countries of commodities moving in world trade. It would have a central committee of limited membership including the United States, the United Kingdom, and Canada.

A list of measures, still unspecified, for conserving and expanding food supplies. The list might include such expedients as the adjustment of livestock herds to the world grain shortage increasing the extraction rate of wheat flour and limitations on the use of grain in beverage alcohol.

Preparation for a long-range food body with executive powers that could put into effect the recommendations eventually to be made by the Food and Agricultural Organization.

Continuance of the work of the United Nations Relief and Rehabilitation Administration even after the organization has been ended by the UNRRA Council. The committee urged that the FAO and UNRRA cooperate closely and coordinate the work "to effect a smooth transition from the short-term program to the long-term objectives of the FAO."

The major result of the conference was the agreement on the need for a temporary emergency body to direct the allocation and distribution of foodstuffs much as the Combined Food Board did during and since the war. The new council is considerably broader in scope, however.

The council will include at least the following: Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Cuba, Denmark, France, Greece, India, Netherlands, New Zealand, Norway, Turkey, the Union of South Africa, the United Kingdom, and the United States. The Soviet Union will be invited to join.

Editorial

A CHALLENGE AND AN OPPORTUNITY

Within the brief span of twenty-one years, the JOURNAL has grown from a small bulletin to a recognized and accepted scientific and professional publication. Mrs. Mary P. Huddleson's aims for a high standard of copy, for accuracy and care in the preparation of scientific papers, and for diversity of material have been realized. The actual breadth of this diversity in material has been a reflection of the growth in membership and can be viewed from a recent analysis of the JOURNAL readers. Dietitians in hospitals, schools, and restaurants; teachers of food and nutrition in colleges and schools; health workers; as well as members of the medical profession are receiving the JOURNAL both in this and in foreign countries. To meet the demands of these varied readers the JOURNAL has been developed to include scientific articles of high caliber representing the fields of diet therapy, community nutrition, professional education, and administration; abstracts of Current Literature; Editorial and Current Comment sections; as well as a much-read News Notes section. Such a coverage merits well deserved recognition, but imposes exacting responsibilities.

The new editor fully appreciates these responsibilities and will strive with the assistance of the editorial staff and the membership to see that these high standards are maintained. However, it is obvious that this aim alone is insufficient. In a field as dynamic as that of dietetics, it is evident that "to stand where you are is to go backward." Always the aim of the JOURNAL has been "for the *advancement* of the profession." While a larger part of the advancement will come from within the membership itself, it is also true that much will necessarily come from allied professional workers. With new horizons in biochemistry, medicine, psychiatry, health education, agricultural economics, food processing, and industrial feeding, to name only a few, the areas of dietetics will expand.

In planning new functions and advancing the usefulness of the JOURNAL, it is to be expected that many of the most valuable contributions to each section will come from the membership itself. Papers of unusual merit from the state programs should be made available to the whole membership through publication as one of the major scientific articles. Outstanding professional activities both of active and student members should be described in the Current Comment section.

The Editorial section will provide an opportunity for you to present your viewpoints regarding controversial subjects, new trends, current literature, and research. One of the most potent stimulants to progress is well directed criticism, constructive suggestions, and an imagination and vision for new opportunities.

In the News Notes section, each state is considered an integral part of the whole Association's monthly report of personal and professional activities, new appointments, and special programs. Regular, current, and complete reports from each state will be needed to keep this section timely and popular.

The new editor will be cordial to recommendations, suggestions, and contributions from the membership, for the value of the JOURNAL will be in direct proportion to the extent to which it is *of* the membership, *for* the membership, and *by* the membership. Your participation is invited.

ASSISTANT TO THE EXECUTIVE SECRETARY

Virginia Harger has come to the Association with a wide breadth of training and experience in administrative dietetics as well as teaching and counseling.

Miss Harger is a native of Spokane, Washington, with undergraduate training from Washington State College, a dietetic internship from King County Hospital, and the Master of Science degree in Institution Management from Kansas State College.

Miss Harger's experience in administrative dietetics was gained as a graduate assistant at Women's Residence Hall, Kansas State College and as dietitian for the dining halls at the University of Nevada. More recently this experience was extended by service with the Army at Birmingham General Hospital, Van Nuys, California.

Miss Harger's interest and experience in teaching and counseling was furthered as instructor in the School of Home Economics at Ohio University and in the Department of Nutrition at Stanford University, California, as well as a summer camp counsellor for the Camp Fire Girls. She comes to Chicago from Birmingham General Hospital.

REPORT OF NOMINATING COMMITTEE, AMERICAN DIETETIC ASSOCIATION, 1945–46[1]

The Nominating Committee of the American Dietetic Association—Marion D. Floyd, Maniza Moore, E. Evelyn Smith, Maxine Turner, and Mildred Allbritton Elliott, Chairman—presents the following ballot for 1946–47:

President-Elect: Helen A. Hunscher, (Mrs. H. P. Wilkinson) A.B., Ohio State University, and Ph.D., University of Chicago.

Positions held:

Research Assistant, Nutrition Research Laboratory and Children's Hospital of Michigan, Merrill-Palmer School, Detroit
Research Associate, Research Laboratories, Children's Fund of Michigan and Professional Lecturer in Nutrition, Wayne University, Detroit
Professor and Head, Home Economics Department, Western Reserve University, Cleveland

Professional activities:

President, Detroit Dietetic Association
Chairman, Professional Education Section, A. D. A.
Chairman, Foods and Nutrition Division, A. H. E. A.
Chairman, Cuyahoga County Nutrition Committee
Vice-President, A. D. A.
President, Western Reserve University Chapter of Sigma Xi

Publications:

Author or co-author of over 30 articles appearing in the JOURNAL and other professional and scientific journals, and of chapters in two books on nutrition

Vice-President: Bertha Biltz, B.S., Kansas State College, and M.S., University of Chicago.

Positions held:

Dietitian, Edward J. Meyer Memorial Hospital, Buffalo, New York
Dietitian, Toledo Hospital, Toledo
Dietitian and Assistant Director, Nutrition Department Presbyterian Hospital, New York City
Dietitian and Director of Approved Course for Student Dietitians, St. Luke's Hospital, Cleveland

Professional activities:

President, Ohio Dietetic Association
Vice-President, Cleveland Dietetic Association
Hospital Approval Committee, A. D. A.

Vice-President: Helen E. Walsh, B.S., Iowa State College, and M.A., Teachers College, Columbia University.

Positions held:

Nutritionist, Los Angeles County Health Department and Tuberculosis Association
Nutritionist, State Relief Administration of California, Los Angeles County
Assistant Professor, School of Home Economics, Oregon State College, Corvallis
Nutrition Representative and Field Consultant, National Nutrition Program, Washington, D. C.
Nutrition Education Consultant, Nutrition Section, Office of State Relations, United States Public Health Service, Washington, D. C.

Professional activities:

Chairman, Community Education Section, A. D. A.
Vice-President, A. D. A.
President, California Dietetic Association
Secretary-Treasurer, California Dietetic Association

Secretary: Anna Reimer, B.S., Kansas State College, and M.S., University of Iowa.

Positions held:

Dietitian, University Hospitals, Iowa City
Dietitian, University Hospital, Ann Arbor, Michigan

Professional activities:

Chairman, Diet Therapy Section, A. D. A.

Secretary: Lillian Storms Coover, B.S., Iowa State College, and M.S., and Ph.D., Teachers College, Columbia University.

Positions held:

Instructor, Department of Chemistry, Iowa State College
Assistant Professor, Home Science Department, University of Otago, Dunedin, New Zealand
Nutritionist in Charge of Research, Gerber Products Company, Fremont, Michigan

Professional activities:

Chairman, Community Education Section, A .D. A.
Vice-President, A. D. A.
Chairman, Nominating Committee, A. D. A.
Membership Committee, A. D. A.
Investigation Board, A. D. A.

NOMINATING COMMITTEE

The following candidates (five of whom are to be elected) for the Nominating Committee for 1946–47 have been selected as representatives of special fields of interest in the profession:

Helen Cate, B.S. and M.S., Florida State College for Women, Presbyterian Hospital, New York City Training Course. Present position: Associate Professor, Foods and Nutrition, Florida State College for Women, Tallahasee, Florida.

Ruth E. Forsberg, B.S., Rockford College. Present position: Chief Dietitian, The Swedish Hospital, Seattle.

Kathryn W. Heitshu, B.S., Hood College, and M.S., University of Chicago, University of Michigan Hospital Training Course. Present position: Director of Dietetics and Director of Approved Course for Student Dietitians, Medical College of Virginia, Richmond, Virginia.

Cora E. Kusner, Diploma, Battle Creek College. Present position: Administrative Dietitian and

[1] Details concerning provision for making other nominations are stated in Article V, Section 6 of the By-Laws of the Association, as adopted October 26, 1944.

Director of Approved Course for Student Dietitians, Colorado State Hospital, Pueblo, Colorado.

Helen S. Mitchell, B.S., Mount Holyoke College, and Ph.D., Yale University. Present position: Professor of Nutrition, and Dean, School of Home Economics, Massachusetts State College, Amherst, Massachusetts.

Mary W. Northrop, A.B., Vassar College, and M.S., Columbia University, Presbyterian Hospital, New York City Training Course. Present position: Chief Dietitian and Housekeeper, and Director of Approved Course for Student Dietitians, King County Hospital, Seattle.

Nelda Ross, B.S., University of Illinois, and M.S., University of Iowa, University Hospital Training Course, Iowa City. Present position: Director, Nutrition Department, Presbyterian Hospital, New York City, and Director of Approved Course for Student Dietitians, Presbyterian Hospital, New York City.

Rosa Spearman, B.S., and M.A., Texas State College for Women. Present position: Director, Dallas Public School Lunch Rooms, Dallas.

Bessie B. West, A.B., and M.A., University of California. Present position: Head, Department of Institutional Management, Kansas State College, Manhattan, Kansas.

DELEGATES-AT-LARGE

Two of the following candidates are to be elected to represent membership in Maine, Mississippi, Nevada, North Dakota, South Dakota, and Wyoming where there are no affiliated associations:

Sister Mary Alma, B.S., College of St. Catherine, St. Louis University Hospital Training Course. Present position: Dietitian, St. Joseph Hospital, Mitchell, South Dakota.

Lt. Kathryn M. Marsh, M.D.D., A.U.S., B.S., Skidmore College, Methodist Episcopal Hospital Training Course, Philadelphia. Present position: Head Dietitian, Army Air Forces, Fourth Service Command, Regional Station Hospital, Keesler Field, Mississippi.

Isabel Patterson, B.S., Simmons College, and M.S., Syracuse University. Present position: Nutrition Consultant, Department of Health and Welfare, Augusta, Maine.

Ethel Summerour, B.S., Mississippi State College for Women. Present position: Dietitian, Mississippi State College for Women, Columbus, Mississippi.

Appointments, Army Medical Department Dietitians

The following Medical Department Dietitian was appointed during the month of May, 1946.

Orleman, Nancy: Florida State College for Women; Johns Hopkins Hospital

Promotions, Army Medical Department Dietitians

The following Medical Department Dietitians were promoted during the month of May, 1946. They are on duty in Army hospitals in this country and overseas.

Second Lieutenants to First Lieutenants

Burton, Frances E., R-1433
Cobb, Wanda E., R-2036
Domeszwski, Stella J., R-2099
Hatch, Kathleen C., R-2104
Hawes, Martha J., R-1404
Holbert, Mary H., R-2123
Hopkins, Edith E., R-2222
Kozeff, Mary K., R-2143
Long, Mary E., R-2131
Lowe, Mary S., R-2010
Swartz, Dorothy L., R-461

Army Medical Department Dietitians Separated from the Service

The following dietitians have been separated under the provisions of the Separation Policy established by the Surgeon General for Medical Department Dietitians.

Captains

Avitabile, Adele A., R-515, 229 Granite St., Braintree, Mass.
Barbour, Helen F., R-177, 804 North Porter Ave., Norman, Okla.
Lutz, Florence H., R-653, Edgewood Dr., Tuscaloosa, Ala.

First Lieutenants

Artz, Amelia E., R-2149, Woodstock, Va.
Bang, Jennie, M., R-1098, 619 Medary Ave., Brookings, S. Dak.
Bishop, Cynthia, R-563, 215 Douglas St., Salt Lake City, Ut.
Brennan, Grace M., R-945, 141 Park St., Carbondale, Penn.
Brenneman, Avanelle L., R-1141, 2327 Prospect St., Indianapolis, Ind.
Cahill, Sallie J., R-1298, 4523 N. Lowell St., Chicago, Ill.
Foin, Louise C., R-1208, 6031 Drexel Ave., Chicago, Ill.
Greenbaum, Jeannette, R-586, 1738 President St., Brooklyn, N. Y.
Harper, Jessie A., R-764, Rt. #2, Junction City, Ore.
Helfrich, Angela E., R-356, 734 Oak St., Cincinnati, Ohio
Killinger, Wilma R., R-417, Route 2, Flemington, N. J.
Lewin, Ruth E., R-343, 210 Washington, Denver, Colo.
Looney, Mary E., R-1258, 2437 Ferguson Rd., Cincinnati, Ohio
Loughridge, Catherine B., R-2064, Box 81, Ruidoso, New M.
Lundeen, Helen J., R-1311, Knoxville, Tenn.
O'Donnell, Agnes, R-1110, Sylvania Garden, Apt. B-32, Phila., Penn.
O'Hanlon, Wilda F., R-1060, 2078 Charlotte St., Los Angeles, Calif.
Raybourn, Edna M., R-388, 704 Front St., Evanston, Wyo.
Stack, Mary E., R-38, Box 749, Jonesboro, Ark.

Second Lieutenants

Askew, Winnifred E., R-2132, Stockport, Van Buren, Ia.
Carmody, Elsie H., R-1303, 311 Harris Ave., Clarendon Hills, Ill.
Eakle, Dorothy H., R-2220, 916 6th Ave., Ft. Worth, Tex.
Glover, Virginia L., R-2202, 101 Pearl St., Cambridge, Mass.
Lopez-Molina, Dinorah, R-2162, 25 Mendez Vigo St., Mayaguez, Puerto Rico
McCullough, Jane F., R-1271, Forsythe Pl., E. Liverpool, Ohio
Lidofsky, Ida, R-1184, 169th St., Fulton Ave., Bronx, N. Y.
Woolverton, Josephine A., R-2422, RR #4, Abilene, Kans.
Zimmerman, Else H., R-183, c/o H. Liedke, 453 W. Arivick Ave., West Englewood, N. J.

A correction should be made in the list of separations previously reported. The following Medical Department Dietitian has not been separated as reported:

First Lieutenant Margaret S. Mathes, R-916

Current Comment

EDUCATIONAL PROGRAMS IN A VETERANS ADMINISTRATION HOSPITAL[1]

KATHRYN A. MCHENRY

Chief Dietitian, Veterans Administration Center, Hines, Illinois

The management of personnel problems, finances and procurement, and food production in a Veterans Administration facility have been previously described (1). Since World War I it has been the belief of this writer that the efficiency of these dietetic services would be markedly improved with a well planned educational program for all groups of personnel. Such a program has been organized and it is the purpose of this paper to describe the educational facilities now available.

The personnel chart (Fig. 1) gives the line of responsibility. Two main units, an instruction unit and a food production unit, are set up under the chief dietitian. The instruction unit is headed by a well qualified, experienced instructor of dietetics, under whose immediate supervision are the clinic and student dietitians and a chief cook instructor who, with the help of the dietitians and chief cooks, carries out a training program for chief cooks, cooks, bakers, and meat cutters. The instructor of dietetics exercises advisory supervision over the head dietitians, as shown by the dotted line, and also has charge of training student nurses in normal nutrition and diet in disease. The food production unit is directly under the supervision of the assistant chief dietitian, who has the same grade as the instructor of dietetics. Both units are closely integrated.

TRAINING OF STUDENT DIETITIANS

Plans for the training of student dietitians at Hines were initiated in June, 1943. The Central Office of the Veterans Administration in Washington, D. C., and the Civil Service Commission made the appointments to training positions following recommendation from the hospital. The first class was assigned in October, 1943, and since that date a total of 25 students have been graduated. At present there are 24 training positions at Hines.

[1] Published with permission of the Chief Medical Director, Veterans Administration, who assumes no responsibility for the opinions expressed.

In 1943 a manual of student dietitian training was set up. During the next six months this material was redrafted and entitled *Outline of Student Dietitian Training Course in Hospital Dietetics*. The outline includes 50 pages of information under the headings of General Information, Student Dietitian in the Dietetic Department, Assignment Schedule, Class Schedule, Individual, Assignments. It describes procedure in detail; for example, under the assignment in the office of the chief dietitian, the student is given comprehensive instruction on food procurement and production; equipment procurement; diet and nourishment control; relationship of dietetic section to other services; the relationship of educational programs to all services; and financial, personnel, and office management including practice in supervision of clerical and stenographic employees and giving dictation. Students are assigned to clinical teaching, teaching of nurses, and to practice teaching in the school for chief cooks and other trainees. They assist with lectures, laboratory, and on-the-job training.

While following the precarious practices of using reluctant soldiers from the guard house as dietary employees, the writer over a period of years became convinced that a training program should reach all personnel in diet and food preparation and service areas. After gathering material for many years and making several attempts to organize a teaching program including lecture, laboratory, and on-the-job training for personnel, a plan was accepted and financed by the Veterans Administration. This training program was started in November, 1944. Early in 1945 the first classes for chief cooks and cooks were organized at Hines. Cooks already employed at various Veterans Administration hospitals were given an opportunity to attend this school and were paid a salary during the training period.

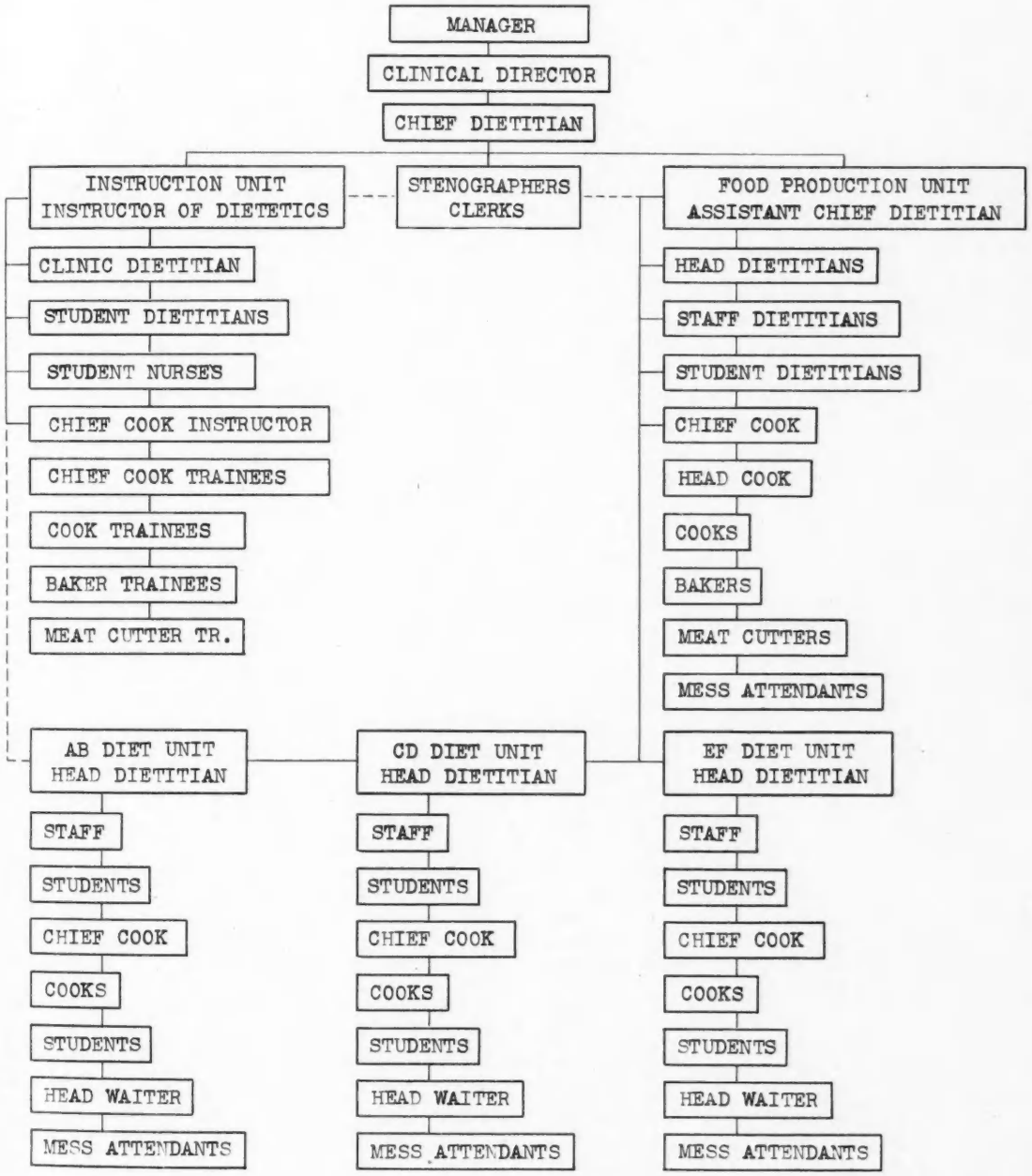
A manual of instruction entitled *Instructor's Outline for Training Chief Cooks, Cooks, Bakers and Meat Cutters* was written and successfully used. Details of this training will be covered in another article. Mention of it is made here only to show the opportunity that student dietitians are given to take part in personnel training.

Central Food Production Unit. Here all foods which lend themselves to central preparation are

prepared and sent to three diet units, which in turn prepare the short orders, set up, and distribute the trays. Ambulant patients are served in adjacent dining rooms. Each unit serves 400 to 550 special and regular trays, and 250 to 300 special and regular diets in the dining room with a total patient load of 2,100. The personnel unit serves 1,200.

DIETETIC SECTION

VETERANS ADMINISTRATION, HINES, ILLINOIS



Adjacent to the central food production unit is the fruit and vegetable room. Products are delivered to this area, processed, and issued or stored.

Vegetables, fruits, salad ingredients, and fruit juices are prepared. This room affords a fine training unit on food procurement, specifications, inspection, and cost accounting. Apportioning, preservation, storage, and utilization are also studied.

The meat, poultry, and fish processing room is also adjacent to the central food production unit. Students are afforded the same opportunities in the meat processing room as existed in the fruit and vegetable room but perhaps on a larger scale.

The central food production unit prepares 10,000 meals daily, giving ample opportunity for study of quantity cookery and baking. There is an adjacent cafeteria for employees and a dining room for personnel and guests. Cash sales and the use of meal tickets afford training in both forms of management.

Throughout the entire period of training the following subjects are studied: personnel management; equipment; sanitation; food procurement, storage, preparation, service, and cost; waste and salvage.

Diet Units. Each diet unit affords further opportunities for the study of administration, but greater emphasis is placed on diet therapy and the care of patients. While working in the diet units, the student makes rounds with the doctors, the head dietitian, and clinic dietitian, and receives bedside instruction from the doctor. In addition to making rounds, the student dietitian is assigned to the instruction of patients which begins with bedside teaching and continues through the clinic until the patient's discharge.

Training is given on the treatment of general medical, surgical, tuberculosis, tumor, and neuropsychiatric adult male and female cases. An affiliation for private room service and infant and child nutrition is provided at Michael Reese Hospital or Women and Children's Hospital in Chicago.

Clinic. Since 1929 a limited amount of clinic work has been done. In the last two years, due to a more generous budget, delayed plans have progressed. The present plan, to be covered in detail in another article correlates the work of the clinic dietitian closely with the work of the head dietitian of each diet unit. The clinic dietitian makes rounds with the doctors and head dietitians and registers all patients who need diet therapy instruction. From admission, the cases are followed and such bedside teaching is given as the patient is able to accept. When the patient becomes ambulant, he reports to the clinic for continued instruction, conferences, discharge instructions, and diet lists. He is encouraged to bring to the conferences those members of his family who are concerned with food management in the home.

An outline entitled *Nutrition Clinic* was written in August, 1945, covering the procedures to be followed and the material to be taught.

Student Nurses. Student dietitians have practice in teaching normal nutrition and diet therapy to student nurses. An integrated training course includes teaching of normal nutrition while the student nurse is working on a designated medical floor for six weeks. Four weeks of experience in the diet kitchen follow, during which time laboratory and diet therapy instructions are given. The nurse plans, supervises preparation and service, and follows up diets on the medical floor on which she worked while taking the first part of her course. She also attends classes for patients in the nutrition clinic.

A well equipped diet laboratory adjacent to the diet unit or kitchen is used, not only for training nurses, but for patients and cooks. It is also used to test foods, food supplements, and diet recipes.

PROFESSIONAL OUTLOOK

Upon completion of the training course, student dietitians so far have been given positions with the Veterans Administration. A few elected to join the Army. There are very desirable positions in the Veterans Administration in administrative work and diet therapy. If the plan established at Hines can be carried forward into other installations, clinic work should develop greatly and offer many benefits to the veteran.

It is difficult to retain excellent diet therapists and clinic dietitians. It has been the plan apparently in the whole dietetic field for the line of promotion to be from the diet therapy into the administrative position. The greater the administrative responsibilities, the higher the salary. This is considered undesirable and thwarts our efforts to train and keep skilled diet therapists who can carry on treatment and consultation programs. Doctors get this important work adjusted and a promotion pre cipitates readjustment. The writer has recommended that the Veterans Administration and the Civil Service Commission give consideration to establishing a plan whereby a staff dietitian, who is an able therapist, may advance into the higher grades and yet remain in diet therapy or clinic work.

The Veterans Administration took a long step forward in 1943 by establishing the position of instructor of dietetics in a grade equal to the position of chief dietitian in a small hospital.

Early in 1945 a higher grade position was established for the clinic dietitian. Further development of this plan, plus increased scholastic requirements and the improved salaries now being offered, give us a firm foundation for the advancement of dietetics as a profession.

REFERENCE

(1) McHenry, K. A.: Nutrition in the Veterans Administration Facility. J. Am. Dietet. A. 18: 152, 1942.

CONSULTATION SERVICE ON THE GREAT LAKES FREIGHTERS

JANE DIEHM STEWART

Assistant Director, Nutrition Service, Cleveland Health Council

A food consultation service for stewards on the Great Lakes freighters has become one of the most interesting projects of the Nutrition Service of the Cleveland Health Council. This consultation service, which aims to help the stewards select a more varied and nutritious menu, came about as the result of a request from a personnel director of one of the lake shipping companies to assist the food stewards on their boats with their food problems. Subsequent planning was for the entire season. So successful was the experiment that with each succeeding year the service has been repeated and extended to several other companies.

Activities at the Nutrition Service office begin each year following the annual spring meeting of lake boat stewards, held the latter part of March. At this meeting stewards talk over problems and experiences of the previous navigation season and discuss problems that undoubtedly will arise during the coming season. The nutritionist, in her capacity as food consultant, meets with the men and ideas are exchanged during an informal discussion.

Our most successful meeting thus far was a dinner party which was arranged by one of the interested members of our Nutrition Advisory Committee. Swedish cooks prepared an appetizing meal which included a meat dish extended with soy products, a green vegetable cooked the proper way, and an unusual cottage cheese dessert. The head cook explained how she made each dish, and the recipes were distributed to the men.

Following this meal, lively discussion was held on ways and means of converting crews to better eating habits. One of the stewards declared his men simply would not eat raw vegetables. When this steward was asked if he ate them, he admitted that he did not care for them and told his men that raw vegetables were just a lot of "rabbit food." Before the nutritionist could point out the psychological problem involved, a fellow colleague of this steward very cleverly answered for her. From his own experience he explained that his men expected a bowl of raw vegetables on the table, and, if it were not in evidence, remarks were heard from the crew. This steward further pointed out that he had first given his crew short pep talks on the eating of raw vegetables, then served them, and the results were overwhelmingly successful. Many questions were asked about the proper methods of vegetable and meat cookery.

To keep the stewards informed regarding foods and to give them new ideas for their menus, monthly bulletins or news letters are sent to them from the beginning of April until the end of the navigation season in November. These news letters are written in a chatty, informal manner, and every month each steward is sent supplementary material, including quantity recipes. Through questionnaires and discussions we have discovered just what topics they would like to have covered in their bulletins.

The greatest difficulty with which the stewards have to cope is the individual eating habits of the men; for example, one steward found his men would eat only one cream soup—tomato. Others found that glandular meats, such as liver and heart, were unpopular. All found their men enthusiastic about holiday menus and created an elaborate one for Thanksgiving.

We found the stewards eager to learn about new foods. Out of this interest we developed a service to keep them informed regarding new products and where they can be obtained. We try to find jobbers in and around the various river stations who will stock these products, and then notify the stewards.

Another service provided is menu checking. At the beginning of each season each steward is given an opportunity to submit his menus for checking from the standpoint of nutrition and variety. They are scored and an evaluation sent to the steward.

Since the personal contact is important, the nutritionist visits the boats when they dock, stopping in the galley to chat with the steward and answer his questions. The interest and appreciation shown by the stewards is most encouraging. Ultimately, it is our hope that the various shipping companies will join in engaging the services of a full-time nutritionist to supervise the food service of all the boats on the Great Lakes.

NUTRITION SURVEYS IN ARIZONA

ETHEL M. THOMPSON, PH.D.[1]

The National Research Council stated in 1943 that every nutritional survey in the past decade has revealed that consumption of diets below the recommended allowances is widespread in the United States. In Arizona there have been no investigations on nutritional status or food consumption of large or representative groups of the population. A few have been made which, although limited in extent, shed some light on the food habits of the Mexicans, Papagos, and Negroes. Some studies have also been made on costs of food consumed by families varying in size and economic status.

As facts are gradually being accumulated, it

[1] Dr. Thompson, professor of nutrition at the University of Arizona and chairman of the Committee on Research, presented this report, covering research and surveys in nutrition conducted by Arizona educational institutions, at a joint meeting of the Arizona Dietetic and Home Economics Associations in Phoenix.

becomes clear that a more vigorous nutrition program is needed, both preventive and curative, in Arizona. To be effective it should be an ambitious program, broad in scope, requiring the cooperative efforts of biochemists, nutritionists, dietitians, physicians, dentists, and social workers.

DIETS OF THE MEXICANS, PAPAGOS, AND NEGROES

According to the 1940 census, 11% of the state's population is Indian. A study of the Papago Indian diet was, therefore, made on the Sell's government reservation where many of the Papagos live. Beans and refined cereals were found to be used freely with too much coffee and too little milk, green vegetables, and fruit. Analysis of several native plants formerly used by them, notably the prickly pear and cholla buds, showed a high calcium content and, because of the low milk consumption, it was advised that these plants be more widely used by these people.

Because so many families from Mexico live in Arizona, food consumption of 12 Tucson Mexican families was recorded over a two-week period. It was found that refined cereals and lard were used in too large quantities with too little fruit, vegetables, and milk. Although this diet is obviously inadequate, the method to be followed by nutritionists in its improvement should be carefully considered. Food habits of a people often have a scientific justification for their continuous use through generation after generation and the merits of an individual food should be carefully assayed before it is discarded. R. S. Harris of the Massachusetts Institute of Technology, in reporting in 1945 on his analysis of the typical diet of Mexico, stated that the diet of a country should be regarded as inviolable until it has been carefully analyzed and evaluated. Lime used in treatment of corn during preparation of tortillas contributes a very significant quantity of calcium to a diet low in milk, which is the principal source of calcium in this country. Hot chili is surprisingly rich in carotene and is basic in diets otherwise low in vitamin A. Dr. Harris further suggests that we should give these people the benefit of our knowledge and skills but not necessarily our food habits.

A study of 100 representative Negro families in Phoenix shows consumption of liberal quantities of vegetables but small amounts of meat and milk. This was especially true of those on low income.

EXCESS FLUORINE IN CERTAIN AREAS

Because certain areas here have excess fluorine in drinking and cooking water, a study was made of fluorine of vegetables grown in fluorine enriched soil. It was found that with the larger concentrations there tends to be a larger deposition in the plant, although not evenly distributed. Some vegetables cooked in water with excess fluorine contained from 18 to 25 times more fluorine than when cooked in distilled water. Washing with distilled water after cooking this way removed only a small part of the fluorine. On the other hand, when a Guernsey and Jersey cow were given drinking water rich in fluorine, a very small but definite increase in fluorine concentration of the milk was observed. Inexpensive bone filters for removing excess fluorine from water are now being used in many areas where water is not brought in.

IODINE DEFICIENCY AND BASAL METABOLISM

In one analysis of drinking water, iodine was found to vary throughout the state from complete absence, leading to goiter, to a relatively high content. No correlation was observed with geographical distribution although mountain water, where analyzed, was comparatively low. Basal metabolisms of 100 college women born and reared in southern Arizona have been found to show the low rate characteristic of warm climates. Although basal metabolism is low also when iodine supply is low, just what relationship exists between these factors in the various parts of the state is not known. How widely iodized salt is used, is not known.

DENTAL CARIES AMONG TUCSON SCHOOL CHILDREN

The only study representing accumulated data on any large group is the three-year dental preventive program in Tucson. Sponsored by the public schools and Tucson District Dental Society, 7,812 children in the first six grades were examined in 1944–45. About 94% of the children examined needed dental attention. Mouth hygiene was first taught selected groups of mothers who in turn took over the responsibility of instructing the children in their districts. Through cooperation between the Tucson District Dental Society and public school administrators an effective effort is being made to repair all defective permanent teeth in children under nine years of age. Most of these cavities are caused by developmental defects which exist at the time of eruption and, if corrected at this early age, most of the future losses of the first permanent molar can be avoided. Clinics are being conducted in school buildings for the removal of infected temporary teeth. A minimum fee of 50 cents per sitting is charged and this is used to supply tooth brushes to the children of the lower grades. Emphasis is placed on the fact that when children are taught dental hygiene when young, and when defective first permanent molars are filled and infected deciduous teeth removed, they are much better equipped to care for permanent teeth erupting later, particularly the 12-year molar which may also erupt with developmental defects. Dental caries will then be radically reduced and general health improved.

COMMUNITY RESPONSIBILITY IN NUTRITION

Home production of vegetables and fruits was important in supplementing market produce during

the war and should continue to do so where practicable. The Agricultural Extension Service reports that in 1940 there were 5,500 farm gardens in Arizona. In 1943–44 vegetable gardens increased to 12,000 city, 75,000 suburban, and 800 4-H Club. Since then there has been a large drop in city and suburban gardens but only 10% in farm gardens. For fall harvesting this agency suggests growing eight vegetables for proper nutritional balance, including carrots, turnips, beets, leaf lettuce, spinach, broccoli, cabbage, and onions. For spring it suggests tomatoes, beans, squash, green pepper, eggplant, cantaloupe, cucumber and chard, where possible. Whether or not home gardens for rural nonfarm families are economically as well as nutritionally profitable depends upon a number of factors which should be carefully appraised. High prices and uneven distribution of perishable vegetables has justified home gardens in the last few years. There was a large increase in home ownership of poultry flocks with a smaller increase in cows. Again advisability of continuing such projects should be carefully investigated.

It should be emphasized that basically essential foods, such as fresh whole and skim milk and whole grain and enriched flour, should be made available to everyone at all times in every community, regardless of income. It should be the responsibility of the community to satisfy this need through its own initiative with cooperating agencies. Consumption per capita of these basically essential foods, particularly that of milk, never has been estimated in this state on any scientific basis.

Incomes and expenditures of 35 Tucson families averaging 3.8 persons with an average annual income of $1,587 and a range of $1,200 to $1,800 were analyzed in 1937–38. Expenditure per family for food was 41% of income. This was 13% more of the income than deemed necessary by the investigator to provide the so-called adequate diet for that year.

In another study, a low cost adequate diet has been priced annually for five years, from 1941 through 1945, during the third week of November in three stores in the University district of Tucson. These were a chain store and two independent grocery stores, one a cash-and-carry, the other giving delivery service. The average cost per week for a family of 4, composed of a man and woman moderately active, a boy 10 and a girl 8, was 33% of a $1,500 income of 1941, 40% in 1942, 41% in 1943, 40% in 1944, and 46% in 1945. Although food cost does vary in different areas, these costs can be used by rural people as a guide for approximate costs. Home produced foods would reduce total money expenditure. Maximum return for money spent depends, however, on knowing what to buy and on buying habits such as (1) buying in proper quantities and in season, (2) reading information on labels, (3) planning ahead for alternates when at the market, and (4) wise use of store services, such as ordering by telephone, credit, delivery, special packaging, and the return privilege. These cost studies point out the need for further work on buying habits and food costs particularly for families on low incomes as a part of the state-wide program. Welfare agencies working together in a community should agree on an adequate food budget which should be the basis of an effective community program.

FAMINE EMERGENCY PROGRAM OF THE AMERICAN RED CROSS

Livingston L. Blair, chairman of the Famine Emergency Campaign, has informed Mrs. Bessie Brooks West, president of the American Dietetic Association, of the famine emergency program of the American Red Cross. Mr. Blair's committee has been given top priority to do a job and to do it in a hurry. Plans have been made and materials have been prepared for use by schools, Red Cross chapter nutrition committees, Red Cross volunteers, and other publicity services.

Twenty-two million check lists for self-evaluation of food saving practices in the homes were mailed directly to schools from twenty printing plants. The check list covers not only meal planning, but buying, preparing, storing, and serving of food.

A leaflet for Red Cross chapter nutrition committees entitled *Tilt the Horn of Plenty* has also been prepared. Methods are given for reaching the city and town through nutrition classes, newspapers, and food and nutrition information centers in grocery and department stores. Methods are also given for reaching the rural communities through exhibits in key spots, talks and demonstrations, and by means of the radio and mobile units.

In order to implement these programs, a publicity kit has been prepared at National Headquarters and sent to chapters from area offices. This kit contains a wealth of background materials, sample editorial and newspaper story, and spot announcements for those chapters having radio facilities. There is also enclosed a tear sheet from the Washington News, April 17, employing selection from 22 pictures issued to photoservices by the American Red Cross. The May issue of the *Courier*, the monthly publication of the American Red Cross, is devoted largely to famine relief.

In addition to the actions which are represented by these materials, the Red Cross has issued specific instructions for the mobilization of volunteers and members of the Junior Red Cross, and for guidance in the coordination of Red Cross efforts with state and local planning groups. From overseas the American Red Cross personnel is sending stories and pictures of desperate needs which are released to the press for use without reference to the source.

Those dietitians who have served as Red Cross nutrition instructors will find this material extremely useful.

Book Reviews

The Rockefeller Foundation. A Review for 1945. By Raymond B. Fosdick. New York: The Rockefeller Foundation, 1946. Illustrated. Pp. 63. No price.

"Traditionally, the program of The Rockefeller Foundation has been the widening of understanding and the development of rallying points of unity, around which men of differing races, cultures, and faiths can join. These areas of common interest have been in the fields of science, agriculture, public health, medicine, the humanities and the social studies; and this report attempts to illustrate some of the activities that were initiated in 1945." Thus Mr. Fosdick gives the keynote for the Foundation's program.

Of the 2 million dollars appropriated in the field of social sciences, approximately 50% was devoted to international relations. In 1945 The Rockefeller Foundation made a grant of $250,000 to Columbia University to aid in the development of a Russian Institute, with the purpose of furthering harmonious relations between Russia and the United States. The Division of the Humanities continued its support to a number of American institutions for the teaching, on both the graduate and undergraduate levels, of Russian, Chinese, Japanese, and other far eastern languages and cultures.

In the international field of public health, the Foundation assisted in the annihilation of the deadly anopheles gambiae mosquito following its invasion through the Nile Valley in Upper Egypt to within 200 miles of Cairo, causing the most serious epidemics of malaria recorded in Egyptian history. By February, 1945, the gambiae were completely exterminated.

One million dollars was given to Harvard University for its School of Public Health to provide special training in scientific principles, administrative methods, engineering techniques, and the point of view of preventive medicine and public health. The Harvard School has already made notable contributions in industrial medicine, child and maternal hygiene, and sanitary engineering.

In the countries where nutritional standards are inadequate, studies have been sponsored in human nutrition, organic chemistry, plant disease, pest control, agricultural statistics, plant breeding, and soil science. The Foundation has entered in the field of agriculture in Mexico on an operating basis, in conjunction with Mexican agricultural scientists. The field work has grown from a single small experimental plot to experimental fields in these states of Mexico: Morelos, Querétaro, Guanajuato, Aguascalientes, Puebla, Michoacán, Coahuila, and Sonora, thus making possible the study of important agricultural problems with respect to regional limitations. This pioneering work in Mexico has indicated what can be accomplished through cooperative relationships of the sort now existing.

In Iceland, agriculture is concerned predominantly with animal husbandry. Cattle and horses are raised in considerable numbers, but sheep characterize the industry. Unfortunately, the sheep have been susceptible to imported diseases. Iceland has never been able to maintain a stable health economy in its livestock. In 1945 the Foundation contributed $150,000 to the University of Iceland toward the development of an Institute of Experimental Pathology.

As in previous years, the Foundation continued its active support of psychiatry. The grant to the University of Illinois was to study schizophrenia; the Columbia University grant was for the investigation of genetic factors in nervous and mental diseases peculiar to old age. The funds to the American Psychiatric Association were for its Committee on Psychiatric Nursing. At Vanderbilt University support was given to continue a study of the emotional reactions of patients about to undergo surgery. This effort has shown that recovery may be more thorough and complete by helping the patient to handle the feelings aroused by the threatening experience of surgery. It has also supplied evidence that some symptoms which tempt the surgeon to operate may be alleviated by proper attention to the patient's emotional life.

The International Health Division of the Foundation has continued to carry on its work in every country of Latin America. Particular attention has been given to the development of state and local health services and the training of adequate personnel to undertake their administration. A fellowship program was employed for this purpose. Since 1914, 694 fellowships have been awarded to Latin Americans for study in the United States and elsewhere. This health program has been carried out in complete cooperation with the governments of the countries involved. As a matter of fact, any work that an organization carries on in another country is always a two-way exchange. Certainly, over the last decades the widening understanding of Latin American life has had its repercussions in the United States. The civilization of Latin America is much older than our own, and the arts of living are in many respects more mellow and mature.

The Rockefeller Foundation program for European refugee scholars began in 1933 and ended with the cessation of hostilities in 1945. Altogether the Foundation expended $1,410,778 for this purpose and aided 303 individual scholars.

In the last 30 years, the Foundation has given fellowships to approximately 7,700 men and women and has spent for this purpose more than $20 million. The war sharply contracted the fellowship program. With the end of the war, the program has been restored to something of its former dimensions. In 1945 a total of 196 fellowships was granted at a cost of approximately $500,000.

Nutrition Studies in Puerto Rico. By Ana Teresa Blanco. Rio Piedras: Social Science Research Center, University of Puerto Rico, 1946. Mimeo. Pp. 96. Price, 25¢.

The objective of the new Social Science Research Center of the University of Puerto Rico is to contribute to the solution of Puerto Rican problems through the investigation of cultural phenomena and the publication of useful social science material.

The purpose of this study was to collect evidence on the nutritional problems in Puerto Rico from the physical status

and dietary studies available and to present what can be done or is being done about the situation. The subject is discussed under four headings: studies on growth and physical development; studies on the evidence of deficiency disease; dietary studies; and measures that can be taken or are being taken to improve the conditions.

The studies on growth and development show that Puerto Ricans are smaller and weigh less than the corresponding American groups with which comparisons have been made. The author states that it is not possible to say how far the differences are due to heredity or socio-economic conditions. The evidence indicates those groups better off socio-economically are also better off in physical development, thus suggesting that the economic factor is largely responsible for the poor physical development of most of the island groups. Sufficient evidence is not available to indicate the influence of a tropical climate as a limiting factor in growth. It is pointed out that Puerto Ricans may have the same potentialities as found in American groups, provided adequate improvement is made in diet, medical and sanitary facilities.

The status of the island is discussed in respect to dietary deficiencies, such as anemia, ariboflavinosis, avitaminosis A, beriberi, dental caries, nutritional edema, pellagra, rickets, osteoporosis, scurvy, and sprue. The population was found to be living near the borderline of clinical deficiency in protein, calcium, vitamin A, riboflavin, and ascorbic acid.

The incidence of dental caries was found to be less in Puerto Rico than in children in the United States. A tendency was noted toward an increase in caries with a rise in socio-economic position. According to the author, no adequate explanation has been offered for the better teeth of the more underprivileged Puerto Rican children. It has been suggested that city children, by receiving a diet more dependent on rice and beans than rural children, may actually be getting a poorer diet than the latter; that rural children may be getting more fruits and vegetables than is generally believed; that sugar, which is taken in larger quantities by urban children, may account for the difference; that rural children may get more sunlight than the urban group.

A discussion is included of dietary surveys made to correlate the adequacy of the diet with the prevalence of undernutrition seen in growth and physical status studies. Some of the dietary studies offer evidence as to the kind and variety of foods used without giving quantitative information; the nutrients have been calculated in some of the diets, while in others comparisons have been made with standards of diet adequacy. A few studies have tested the actual food value of some of these diets, either by chemical determinations or by rat assay. A general discussion of the Puerto Rican diet points out that the majority of the population is receiving foods that do not provide the necessary kinds or amounts of protein, minerals, and vitamins. Even those groups that have enough money to buy the right kinds of food have an inadequate diet.

Efforts to improve the nutritional conditions of the island have involved a consideration of ways of making available the necessary supply of the right foods to all groups of the island, as well as ways of getting the people to accept and use these foods. The most promising ways to accomplish this end are: greater food production with special emphasis on more milk, meat, eggs, whole grain cereals, fresh fruits, and vegetables; measures for better land distribution; an educational campaign on nutrition; and an emergency feeding program to relieve the situation until more permanent improvements can be effected. Work has been started in all these directions but an extension of the program is still needed. It is stressed that control of population increase is urgently needed to prevent an intensification of the existing, distressing situation. Other aspects of health work, such as control of parasitic infection, will also be basic to nutritional improvement.

The author concludes that there is no likelihood that the nutritional conditions in Puerto Rico can be completely or permanently solved in the near future, such a solution being dependent in a large measure on readjustments in the socio-economic and political structure of the island.

There is included a valuable list of general references on the nutritional problems in Puerto Rico, as well as a selected list of references on the problems of changing food habits.

Nutrition Studies in Puerto Rico is the first number of the Center's Research Aids Series. It is a report based on Miss Blanco's dissertation submitted to the faculty of the Division of Biological Sciences of the University of Chicago and was written under the direction of Dr. Lydia J. Roberts, now of the University of Puerto Rico.

Food and Nutrition. Prepared under direction of Division of Elementary Education, State Department of Education in Cooperation with Bureau of Maternal and Child Health, State Department of Public Health. Distributed by California State Department of Education, Sacramento, 1945. Paper. Pp. 160. No price stated.

The California State Departments of Education and of Public Health are to be congratulated for uniting their efforts in giving their teachers such an attractive handbook of food and nutrition. Joint publications of this type are highly desirable as a means of having teachers receive uniform, carefully presented facts for use in their classrooms. Too often different agencies within the same state have prepared food and nutrition literature independently of each other containing conflicting or contradictory facts. This results in bringing confusion rather than clear cut, useful facts to the busy teacher.

The size of the manual, the paper, print and profusion of excellent photographs make this book very readable and interesting to teachers and pupils.

The book is divided into three parts. Part I, "Man's Quest for Food" outlines the period from primitive times to the National Nutrition Conference in Washington in 1941. This section gives a comprehensive interpretation of the local food problems of primitive man and the sharp contrast with the present international problems of food and nutrition.

In Part II a detailed description entitled "Basic Considerations Regarding Nutrition" is presented. In this section the use of more outline form for giving the functions of various dietary essentials might make it easier for the teacher to use. Food sources of each essential are arranged in column form using the tables in "Food and Life", *Yearbook of Agriculture, 1939*. While these tables divide food into excellent and good sources, they are in no way related to the best sources of the various minerals and vitamins. Such a summary following the tables would give the teacher more practical teaching points directly related to the meals school children eat. For example, on page 40, in the table, "Food Sources of Thiamine", no mention is made of enriched or whole grain bread. Because of its frequent and regular use in meals bread makes a large contribution to the school child's thiamin intake.

Part III contains an excellent outlined entitled "Areas of Experience". The curriculum departments of 4 rural counties contributed this section.

The Appendix includes a table entitled "Caloric Value of Average Servings of Food", and a section entitled, "Planning for Food Service", which should be of practical value. There are also 22 pages of detailed bibliography.

On the whole this book should be a splendid aid to the classroom teacher in interpreting the increasingly important topic of food and nutrition.—*Anna dePlanter Bowes, Chief, Division of Nutrition, Pennsylvania Department of Health.*

Current Literature

Contributed by Janette C. Carlsen, Dietary Department, Johns Hopkins Hospital; and Mrs. Norma Rubovits, Bobs Roberts Hospital, University of Chicago Clinics.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 13, March, 1946

Protein deficiency in man. M. Sahyun.—p. 59.
The physiologic use of water in constipation. J. A. McKenney.—p. 78.
Vitamins and hormones in nutrition. II. Endocrine dyscrasia. B. F. Sieve.—p. 80.

Vol. 13, April, 1946

The role of the co-enzymes of the B-complex vitamins and amino acids in muscle metabolism and balanced nutrition. S. L. Ruskin.—p. 110.

The B-Complex Vitamins and Amino Acids in Muscle Metabolism. In this investigation the primary objective was the study of energy factors in nutrition. The study of amino acids led to the study of vitamins. Now the study of vitamins leads us back through respiratory enzymes to amino acids. Correct amino acids must be supplied for respiratory enzyme formation which is essential for successful vitamin therapy. Synthetic vitamins represent only one element of this system and alone are biologically inactive. The patients who need vitamins are the ones most likely to be lacking the amino acids necessary for the formation of the co-enzyme.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 211, April, 1946

*Emotional factors in obesity. W. M. Nicholson.—p. 443.

Emotional Factors in Obesity. In view of the fact that experience has shown a high incidence of failure in weight reduction when diet therapy alone is used, and due to the observations of many that desire for excessive food consumption is based on a disturbance in the psychologic make up of an individual, the following study was arranged to evaluate different forms of therapy. Ninety-three patients were divided into the following four groups: (1) In 38 patients, detailed inquiry was made as to their developmental history, social and sexual adjustment, economic status, and other factors that may have had influence on their personality. An attempt was made at superficial psychotherapy which consisted of reassurance and interpretation. No calculated diet was given. However, an explanation of energy exchange and the caloric value of certain common foods was offered. Instructions for keeping a food diary for three days previous to the clinic visit were given. No medication was prescribed. (2) Thirty-five patients were given a calculated diet of 800 calories. An experienced dietitian explained the diet and, when desired, gave further instruction on return visits. No medication was given, and no attempt at psychotherapy made. (3) Ten patients were given 5 mg. amphetamine sulphate three times a day with no psychotherapy and no calculated diet. (4) Ten patients were given thyroid, with no psychotherapy and no calculated diet. It was arbitrarily decided that the individual subject would be classified as a failure if he did not maintain a weight loss of 5 kg. or more for one year, or if any relapses occurred after a year. On this basis, results indicated a higher percentage of success in the psychotherapy group than in any other. Of the 38 patients in group 1, 26 were successful and 12 were failures. In group 2, 9 out of the 35 patients were successful and 26 were failures. There was no success in groups 3 and 4. All of the obese patients studied were found to have some type of psychoneurosis, in varying degrees.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 36, April, 1946

*Microbiological examination of foods. H. E. Goresline.—p. 332.
*Infectious hepatitis-presumedly food-borne outbreak. M. R. Read, H. Bancroft, J. A. Doull, and R. F. Parker.—p. 367.

Vol. 36, May, 1946

*Pasteurization of liquid egg products III. Destruction of Salmonella in liquid whole egg. A. R. Winter, G. F. Stewart, V. H. McFarlane, and M. Solowey.—p. 451.

Microbiological Examination of Foods. This article presents tentative workable methods of testing frozen foods which may be used as a basis for perfecting standard methods for testing. Modifications and improvements will be effected as more experience in this field is gained.

Infectious Hepatitis from Food. An outbreak of infectious hepatitis among medical students is described. The outbreak was explosive, involved only members of one fraternity, and primarily those who ate regularly at the fraternity dining table. The cases were not traceable to previous cases, and so far as could be determined led to no secondary cases.

Egg Products. The presence of Salmonella organisms has been reported in hen, turkey, duck, goose, and pigeon eggs. The authors have studied the pasteurization temperatures and times necessary to destroy sixteen different Salmonella types in liquid whole egg. With two exceptions, the Salmonella types were destroyed at 150°F. within .3 min., at 148°F. within .8 min., at 146°F. within .8 min., at 144°F. within 1.2 min., at 142°F. within 2 min., at 140°F. within 2.6 min., and at 138°F. within 3.7 min. Samples were heat treated in a laboratory model pasteurizer. Complete data are included.

BRITISH MEDICAL JOURNAL

No. 4441, February 16, 1946

*Vitamin C in home cooked vegetables. G. N. Jenkins.—p. 233.

No. 4446, March 23, 1946

Health problems in Berlin. P. G. Harsburgh and H. A. Raeburn.—p. 423.
Nutrition of Leeds school children in winter, 1943, and summer 1944. F. W. Chattaway, F. C. Happold and A. M. Happold.—p. 429.

Chemistry of Food and Nutrition. By Henry C. Sherman. Seventh edition. New York: The Macmillan Company, 1946. Cloth. Pp. 675. Price $3.75.

The seventh edition of this textbook for college courses has incorporated the recent advances in the chemistry of food and nutrition. As pointed out in the Preface, every chapter has been revised, several of them rewritten, and two new chapters, dealing respectively with the nutritional characteristics of the chief groups of foods, and the causes and extent of variations in the nutritive values of foods, have been inserted.

In bringing the subject-matter up to date special care has been devoted to the endeavor to make clear the degrees of certainty yet reached in different aspects of our knowledge of nutrition and food values and to indicate some of the major trends of present-day research in this field.

The discussion of nutritional needs and the tables of nutritive values have been revised in accordance with the recent dietary recommendations and studies of food values by the Federal Government and the National Research Council.

As in previous editions, special attention has been given to the teaching task, namely to show the far-reaching significance of recent discoveries, while at the same time safeguarding against exaggerated impressions.

With the rapid growth of subject matter in the chemistry of food and nutrition, the lists of references and suggested readings have become an even more important feature than in previous editions.

A History of Medicine. By Douglas Guthrie, M.D., F.R.C.S. Philadelphia: J. B. Lippincott Company, 1946. Cloth. Illustrated. Pp. 448. Price $6.

While this book is intended for men of science as an accurate recording of scientific and historical data, it brings life and meaning to the background and traditions of medical practice. It is much more than a recording of data; it is a pleasure to read this colorful consecutive narrative of the development and progress of medicine as an art.

Dr. Guthrie's work is British in its background but there is a notable lack of national boundaries. The book begins with the empiricisms of the ancients, progresses to early Greek, Roman, and Arabian medicine, and continues through mediaeval and renaissance to modern scientific medicine. Well chosen references together with a classified bibliography increase the value of this book to the scholar.

Surgical Nursing. By Robert K. Felter, M.D., and Frances West, R. N., B. S. Fourth edition. Philadelphia: F. A. Davis Company, 1946. Cloth. Pp. 589. Price $3.50.

Subject material has been rearranged to provide better unity, repetitious material has been removed, outmoded material has been deleted, and much new material has been added. The relation of anatomy, pathology, etiology, and the medical aspects of disease to surgery have been discussed. Emphasis has been placed upon the mental aspects of nursing. Occupational therapy has been discussed when indicated. Minimal attention is given to dietetic matters.

How to Be a Success in the Restaurant Business. By Madeline Gray and Vass De Lo Padua. New York: Greenbert, 1946. Cloth Pp. 262. Price $3.50.

This book is written in popular style by Madeline Gray, a feature writer, and Vass De Lo Padua, once an associate of Escoffier and a long-time restaurant operator. Varying degrees of emphasis are made on the recognized practical fundamentals for the operation of large scale food management.

Profit making techniques are emphasized, especially the financial budgeting, food purchasing, the merchandising through the menu, direct guest service, dining room decoration, and window dressing.

Without a doubt the most controversial chapter in the whole book is the one on "Tricks in Big Time Cookery" particularly the discussion on blanching and the cooking of vegetables. In the suggested basic patterns for menu making is the glaring omission of typical American salads and sandwiches. The publication is intended for owners and managers of large restaurants, and their executive chefs and kitchen stewards.

More Meat for Your Money. By Alice Easton. Stamford, Conn.: The Dahls, 1946. Cloth. Pp. 128. Price $1.

The world-wide need for food has imposed limitations on the supply and distribution of meat which promise to continue for some time. This situation means that menu makers in both the professional and home field will be particularly interested in these unusual and attractive recipes which are designed to make the meat supply go farther.

AMERICAN CHEMICAL SOCIETY

THE AMERICAN CHEMICAL SOCIETY in conjunction with the Fourth National Chemical Exposition will be held in Chicago, September 9 to 13.

Many of the exhibits will reflect the results of the war, either in modifications resulting from changes in material resources or innovations brought about by war research and development work.

Plastics will be represented at the show and there will be adequate displays of plasticisers, solvents, intermediates, and other chemicals. The exhibits will also indicate the great advances that are being made in synthetic rubber, textiles, and other products. Plans are being made for the motion picture program which will be a highlight of the show.

Another feature attraction will be the exhibit of "Chemical Trail Blazers." The three dimensional method of presentation will be adopted for this interesting symposium of new ideas, new discoveries, new developments, and new applications in industrial chemical progress.

Dr. H. E. Robinson of Swift & Company is chairman of the 1946 show committee. Headquarters for the show are located in the administration building of the Coliseum at 1513 South Wabash Avenue, Chicago 5, Illinois.

Home Cooked Vegetables. The vitamin C contents of over 300 samples of vegetables cooked in ordinary households in three different towns were determined in 1943–44. The average results for 100 gm. portions of potatoes were found to be 10.5 mg. in September, and 5 mg. in April. Similar size portions of cabbage were found to average 13 mg. in September and 35 mg. in April. Average meals containing potatoes and greens provided between 20 and 28 mg. of vitamin C, according to season. Average meals containing no green vegetables provided less than 15 mg. vitamin C in September and less than 8 mg. in April. Correlation between vitamin C values as analyzed and vitamin C values as calculated was poor in individual cases, but the average agreed fairly well, especially with potatoes.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 54, April, 1946

*Hypertension and its management. W. F. Connell.—p. 348.

Hypertension and Its Management. Hypertension is a malignant killer when it strikes the very young or middle age individual. The patient's progress depends primarily on how much change he has in his heart or in his head. It is best to treat the patient, not his blood pressure level.

FOOD RESEARCH

Vol. 11, March-April, 1946

*Ascorbic acid content of the mango in relation to variety. H. E. Munsell —p. 95.

*Studies on veal I. Effect of different internal temperatures on veal roasts from calves of three different weights. P. Paul and B. B. McLean.—p. 107.

Studies on veal II. Variations between some muscles of the hind quarter P. Paul and B. B. McLean.—p. 116.

*Riboflavin content of tropical foods. C. F. Asenjo.—p. 137.

*Studies on vitamin content of canned pineapple. A. J. Haagen-Smit, A. G. R. Strickland, C. E. P. Jeffreys, and J. G. Kirchner.—p. 142.

*Ascorbic acid content of cabbage salads. V. P. Quinn, F. I. Scoular, and M. L. Johnson.—p. 163.

*Nutritive value of fish from Michigan waters. I. Nicotinic acid of lake herring, carp, common suckers, and burbot. J. F. Klocke, T. Porter, P. I. Tack, E. Leffler, N. S. Henry and R. Nitchals.—p. 179.

Ascorbic Acid Content of the Mango. Values for the ascorbic acid content of 28 varieties of mangoes are presented. The range of these values is from 9.13 mg. per 100 gm. of edible portion found for one fruit of the mango pasote or common variety to 130.81 mg. per 100 gm., the value for one fruit of the variety designated as Governor's Seedling No. 2 and grown at the Insular Agricultural Experiment Station in Rio Piedras, Puerto Rico. The results of the study suggest that the vitamin C content of the mango is closely related to variety.

Studies on Veal. In a study of the effect of increasing the internal temperature of veal roasts obtained from small, medium, and large calves, the following results were obtained: The cooking losses and cooking time and the scores for flavor, color, texture, and tenderness of the meat all increased while the juiciness decreased with increasing internal temperature. The cooking losses increased slightly with the size of the animal, while the cooking time in minutes per pound decreased. The roasts from the large animals gave the best results for flavor and texture, while those from the small animals were juiciest and most tender. The extent of the variation induced by increase in internal temperature on texture, tenderness, and color was less for roasts from large animals than for roasts from small animals. The comparative digestibility in vitro did not increase with increasing internal temperature. Of the temperatures studied it was thought that 82°C. (180°F.) gave the most satisfactory results, particularly for the roasts from the smallest animals.

Riboflavin in Tropical Foods.—The riboflavin content of 93 articles of food important in the diet of Puerto Rico and neighboring islands was determined by microbiological procedure. Results are tabulated.

Vitamin Content of Canned Pineapple. Vitamins A, thiamin, riboflavin, ascorbic acid, pantothenic acid, and p-aminobenzoic acid were quantitatively determined in various types of canned pineapple, prepared by various canning methods and during various seasons of the year. In most cases parallel determinations by bio-assay and by chemical or physico-chemical methods were made and compared. Results are tabulated.

Cabbage Salads. This study was undertaken to determine the ascorbic acid content of raw cabbage salads with and without salad dressings, and held at room and at refrigerator temperatures. Results indicate that French dressing, vinegar mayonnaise, and lemon juice mayonnaise all aid in the retention of ascorbic acid in raw shredded cabbage salads. Shredded cabbage mixed with salad dressing retains more ascorbic acid at room temperature than that without salad dressing. The lemon juice mayonnaise offers more protection at both room and refrigerator temperatures than either the French dressing or the vinegar mayonnaise. Both the vinegar and lemon juice mayonnaise gave higher ascorbic acid retentions than the French dressing.

Fish from Michigan Waters. The effect of environment, season of the year, and processing on the nicotinic acid content of lake herring, carp, common sucker and burbot was studied. Enzyme digestion and a modification of the Dann and Handler chemical method were used to determine nicotinic acid. In general, the nicotinic acid content of fresh, frozen, and smoked lake herring is comparable to the nicotinic acid content of lean meat. The content of carp, burbot, and common suckers is slightly lower. Detailed tables of results are presented.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 130, April 27, 1946

*Faulty management of psychiatric syndromes simulating organic disease. A. E. Bennett.—p. 1203.

*Vitamin D intoxication with metastatic calcification. J. M. Bauer and R. H. Freyberg.—p. 1208.

*The bone marrow in experimental folic acid deficiency. Editorial.—p. 1224.

*The anemia of chronic infections. Editorial.—p. 1226.

Vol. 131, May 4, 1946

*Folic acid therapy in the anemias of infancy and childhood. W. W. Zuelzer —p. 7.

Vol. 131, May 11, 1946

Treatment of headache with intravenous sodium nicotinate. J. W. Goldzieher and G. L. Popkin.—p. 103.

*Ascorbic acid in tomato juice. Editorial.—p. 141.

Vol. 131, May 18, 1946

Effect of antepartum vitamin K on retinal hemorrhage. H. F. Falls and H. N. Jurow.—p. 203.

The problem of chronic alcoholism. Current Comment.—p. 222.

Vol. 131, May 25, 1946

*Para-aminobenzoic acid in Tsutsugamushi disease. N. A. Tierney.—p. 280

Psychiatric Syndromes. Faulty medical and/or surgical treatments are compared with modern psychiatric treatment in a detailed study of 150 psychoneurotic and psychotic patients. The 150 psychiatric patients had had a total of 496 courses of medical treatment and 244 courses of surgical treatment prior to the time their illness was diagnosed as psychiatric in nature. Proper psychiatric treatment resulted in social rehabilitation of the great majority of the

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patients. This study and pertinent citations from the literature indicate to the author that the general medical profession fails to recognize and treat properly mental illness. The result is a tremendous army of maladjusted persons going from doctor to doctor and receiving illogical medical and surgical therapies that only aggravate their personality problems. The entire problem is too great for the psychiatrist alone; all physicians of the future will have to practice some psychiatric medicine.

Vitamin D Intoxication. Because of the increasing tendency for the use of large doses of vitamin D in the treatment of a variety of conditions, the authors felt it worth while to report a fatal case (adult) resulting from the use of this drug and to review five previously reported cases (infants) of metastatic calcification resulting from its use. The case reported is an example of the injudicious self-medication with one of these preparations and indicates the potential danger therefrom. Too many conclusions are not justifiable from the limited data on the subject; however, the authors believe the following are warranted from a review of the cases: Concentrated vitamin D preparations, especially in large doses, should be considered potentially toxic drugs. Their administration should be carefully supervised and the recipient should be kept under close observation in order to detect symptoms of toxicity. When given in excess of tolerance, characteristic symptoms (anorexia, nausea, vomiting, headache, genito-urinary complaints, diarrhea, muscular weakness, lassitude) result which should be recognized in order to forestall more serious consequences. In the human being death may occur as a result of vitamin D intoxication causing calcification of organs and arteries. The intoxicating dose depends on many factors and varies greatly in different persons and at different times in the same person. Abnormal calcium metabolism and resultant pathologic changes are discussed.

Folic Acid. One problem of immediate importance in the study of folic acid deficiency is the type of alteration produced in the bone marrow and the effect of administration of folic acid on these changes. Further reason for the fundamental importance of studies of the bone marrow is the fact that folic acid deficiency in the experimental animal may produce not only an anemia but also a severe granulocytopenia The profound fundamental effect of folic acid on hemopoiesis and leukopoiesis invite further investigations on the mode of action of this substance in blood formation.

Anemia. Clinical experience has shown that anemias which occur during chronic infections such as empyema, endocarditis, and osteomyelitis are almost always refractory to the administration of iron either orally or intravenously. A clinical study of the utilization of iron showed that the plasma iron values of patients with chronic infections were consistently lower than normal. However, serum copper values were increased, a phenomenon observed in a number of types of anemia in which there is an increased demand for iron for hemoglobin regeneration. It is postulated that the failure of the utilization of iron for hemoglobin regeneration during chronic infection is probably due to the demand for iron to fulfill some function in relation to infection, which has a greater priority for iron than has hemoglobin formation. Continued experimental studies of this thesis should prove of importance in elucidating the etiology of the anemia of chronic infections and in pointing the way to a more rational, adequate therapy.

Folic Acid in Anemia. Studies on the effect of folic acid in a variety of anemic conditions observed in infants and children are reported. It was concluded that folic acid is an antianemic factor specifically effective in anemias of infancy with megaloblastic bone marrow and ineffective in any of the other anemias of infancy and childhood investigated thus far. There is a complete parallelism regarding the response to folic acid between the anemias of infancy and those of adult life.

Ascorbic Acid. From the nutritional point of view the dietitian, pediatrician, and consuming public are interested in the quality of tomato juice with respect to its content of vitamin C. This interest has been recognized by the recent decision of the Council on Foods and Nutrition in which a minimum standard of 20 mg. of ascorbic acid per 100 cc. of juice was recommended. That some such standard is desirable is indicated by studies on 79 samples of canned tomato juice, in which a variation of from 2.5 to 25.2 mg. per 100 cc. were recorded. The factors which may influence the content of ascorbic acid in tomato juice have also been examined. The small fruited varieties contain much more vitamin C than the large fruited varieties. It has been found that the degree of ripeness, storage at temperatures of 65° to 90°F. for 10 to 14 days, fertilization of the ground, humidity, picking, transporting, and processing at the cannery are of minor importance. However, the intensity of light to which the mature green fruit is exposed is a highly important factor in the production of a high content of vitamin C in tomatoes. The greatest cause for variation of vitamin C in the finished product is the variation in the tomatoes from which the juice is prepared. The foregoing data illustrate the possibility for better national nutrition when the agricultural chemist, the geneticist, the agronomist, and the food processor cooperate in producing superior foods.

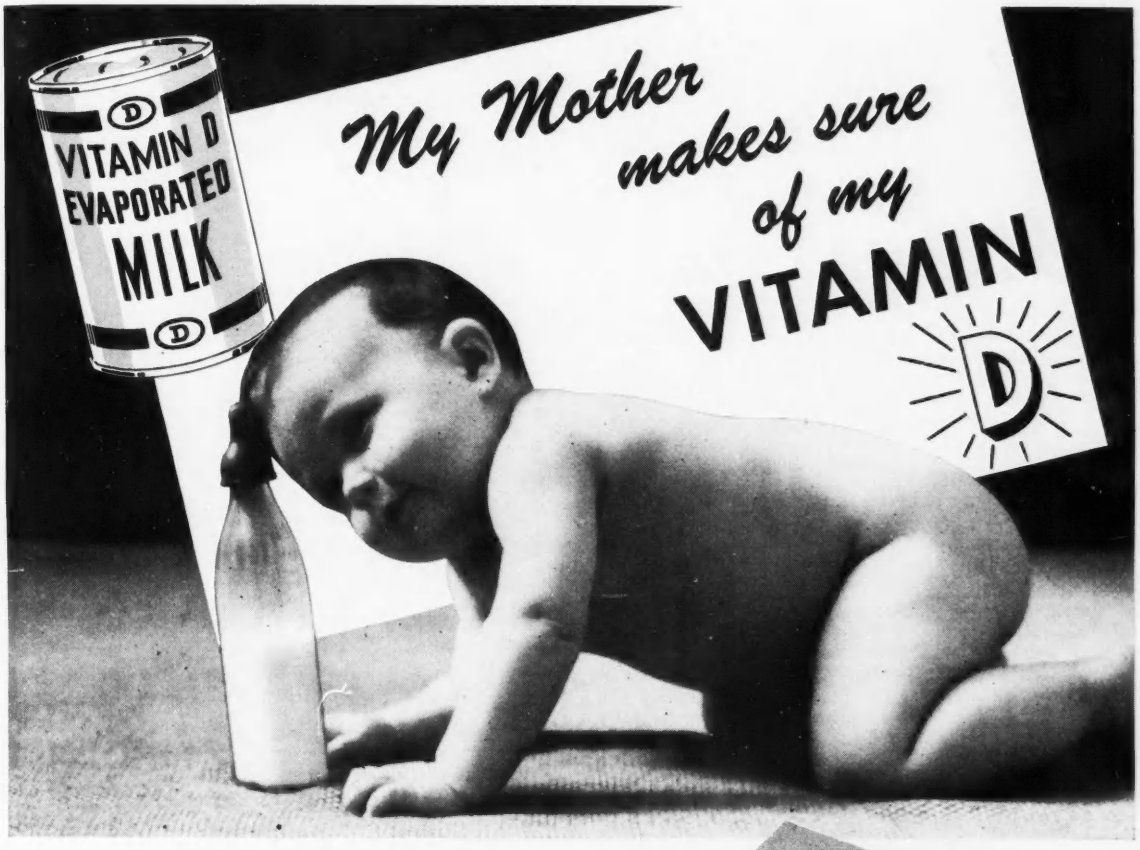
Para-aminobenzoic acid. Eighteen patients with tsutsugamushi disease (scrub typhus) were treated with large doses of para-aminobenzoic acid, and their clinical courses were compared to 16 alternate controls who received the standard treatment. The difference between the course of the disease in the para-aminobenzoic acid cases and the controls was striking. The patients who were given para-aminobenzoic acid had fewer days of fever, less severe symptoms and complicating conditions, a shorter period of convalescence, and a lower case fatality rate. It is concluded that para-aminobenzoic acid administered in the first week of the disease is an effective therapeutic agent against tsutsugamushi disease.

JOURNAL OF NUTRITION

Vol. 31, April, 1946

*Self selection of diet. I. Selection of purified components. E. M. Scott.—p. 397.
*Variability in the calcium metabolism and calcium requirements of adult subjects. F. R. Steggerda and H. H. Mitchell.—p. 407.
*The effect of the citrate ion on the calcium metabolism of adult human subjects. F. R. Steggerda and H. H. Mitchell.—p. 423.
*The carotene content of Cuban foods. J. J. Angulo, C. Fuentes, and M. Johnson.—p. 463.
*The effects of added vitamin A on the conjunctiva and the level of vitamin A in the blood. E. C. Robertson and A. L. Morgan.—p. 471.
*Pantothenic acid deficiency and reproduction in the rat. M. M. Nelson and H. M. Evans.—p. 497.

Self Selection of Diet. An assumption was made that preferences for foods are indicative of nutritional requirement and physiological need. Several attempts were made to determine the effect of variations in physiologic requirement on the voluntary intake of purified or partially purified food components by the rat. The appetites of 87 normal rats, allowed their choice of sucrose, casein, hydrogenated fat, and salts are described. Thirty-four of these animals failed to grow. The appetites of these animals, aside from that for salts and calories showed no apparent relation to physiologic or nutritional need. Under certain conditions, successful choice has been reported and other investigators have found a limited ability of rats to select proper foods. The evidence presented here does not indi-



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cate that rats will select a diet according to the nutritional need.

Calcium Metabolism and Requirement in Man. The results of calcium metabolism studies on 19 men are reported. These studies are designed to afford information on the utilization of calcium in diets containing milk products, or calcium salts. These products were estimated to furnish about 60% of the total calcium intake, and to meet the daily requirements of calcium. The diet periods averaged 20 days in length and a total of 75 periods are considered in this report. The average calcium requirement of the adult human indicated by these experiments is 644 mg. daily, or 9.21 mg. per kg. of body weight per day. The effect of body size on calcium requirements in adults for a moderate range in size, is insignificant in comparison with other causes of variation.

Citrate Ion and Calcium Metabolism. The effect of citric acid, sodium citrate, potassium citrate, and orange juice upon the assimilation of the calcium in the basal low-calcium diet and in the basal diet plus milk was studied. Neither potassium citrate nor a mixture of potassium citrate and citric acid appreciably modified the utilization of the calcium in a basal low-calcium diet. The utilization in the adult organism of the calcium of milk is not appreciably or consistently modified by the simultaneous ingestion of sodium citrate, citric acid, or orange juice in considerable amounts.

Carotene Content of Cuban Foods. Results are presented of the carotene analysis of 75 samples of 43 Cuban foods. Results were determined by the chromatographic technique of Wall and Kelly. Of the eight mango varieties assayed, three gave the highest values ever recorded among the fruits. In general, Cuban fruits are richer in carotene than the American and Mexican varieties. The mango, canistel, mamey de Santo Domingo, and red cashew nut had the highest values among Cuban fruits. A list of the remaining "good" foods in order of decreasing carotene content gives the following: red pepper, yellow malanga, ripe plantain, muskmelon, tangerine, Placero tomato, guava, red mamey, okra, and Johnson banana.

Vitamin A and the Conjunctiva. The eyes of 40 healthy young pupil nurses were examined with a slit-lamp: 100% of them showed thickening of the bulbar conjunctivas. The 40 nurses were then divided into two groups as nearly alike as possible as far as the transparency of the conjunctiva was concerned. One group was given 50,000 I. U. of vitamin A per day in two divided doses. The other group received placebos containing corn oil. All of the nurses believed they were receiving vitamin A and the observer did not know to which group anyone belonged. Their conjunctivas were examined with a slit-lamp at frequent intervals. In none of these subjects with conjunctival elevation at the beginning did therapy cause the elevations to disappear. Therefore, the conclusion was drawn that the conjunctival thickening is not caused by a deficiency of vitamin A.

Pantothenic Acid Deficiency and Reproduction. Reproduction was studied in normal adult female rats placed on purified diets deficient in pantothenic acid before or during the gestation period. Pantothenic acid deficiency instituted on the thirteenth day of gestation did not interfere with the reproductive function. Deficiency instituted 16–23 days before mating or as late as the day of mating always resulted in failure of implantation, resorption, or defective litters. The normality of reproduction in pantothenic acid-fed controls restricted in calories eliminated the factors of inanition and of other specific dietary deficiencies as causes for these marked upsets in reproduction.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 234, April 4, 1946

Medical Progress: Diabetes Mellitus (concluded). E. P. Joslin.—p. 476.

Vol. 234, April 25, 1946

* The problem of nutrition in the post-operative care of abdominal wounds of warfare. J. E. Dunphy, S. O. Hoerr, C. L. Dimmler Jr., and R. R. White.—p. 545.
* Psychogenic factors in the etiology of diabetes. B. R. Gendel and J. E. Benjamin.—p. 556.

Vol. 234, May 2, 1946

* Low sodium diet and free fluid intake in the treatment of congestive heart failure. W. C. Bridges, E. O. Wheeler, and P. D. White.—p. 573.

Nutrition in Abdominal Wounds. A report is made of the problems encountered in maintaining the nutrition of 16 patients with extensive abdominal wounds. A program is outlined for maintaining nutrition in such cases, by the parenteral administration of nutrients in the form of glucose and saline solutions, whole blood, plasma, liver extract, and certain vitamins.

Psychogenic Factors in Diabetes. A study was made of psychogenic factors preceding the onset of diabetes mellitus in 44 patients who were admitted to an Army general hospital. In no case was it possible, in the opinion of the authors, to prove a direct causal relation between the stress incident to military service and the subsequent development of permanent diabetes.

Low Sodium Diet in Congestive Heart Failure. It is suggested that restriction of sodium to levels of 700 to 1000 mg. (equivalent to 1.75 to 2.63 gm. sodium chloride) every 24 hr. is helpful in the control of certain cases of congestive heart failure in which digitalis and mercurial diuretics are ineffective or not entirely satisfactory. Providing the sodium intake is held to a minimum, water may be given freely, and may be of advantage in the elimination of edema. This regimen does not replace rest, digitalis, and diuretic therapy but is a valuable adjunct to the treatment of obstinate congestive failure. Five representative cases are reported.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 46, April 15, 1946

* Problems of peptic ulcer in the armed forces and in the returned soldiers. A. L. Garbot.—p. 894.

Problems of the Peptic Ulcer Patient. The incidence of peptic ulcer has been high among the military forces of all nations. The soldiers returning to civilian status will bring with them this important problem and the family physician will be the first one called to meet this situation. The physician must be acquainted with the causative factors and the probable effect on the patient of a different environmental routine. He must find out whether the causative emotional factor still exists and is playing a role in the disease. Besides the psychological aspects, proper diet, strict elimination of improper foods, avoidance of excessive physical fatigue, and emotional upsets are precautions that will help avoid major catastrophes.

SCIENCE

Vol. 103, April 26, 1946

* Availability of carotene from kale. E. O. Keiles, E. C. Callison, J. Schaevitz, and R. Frenchman.—p. 498.

Availability of Carotene from Kale. The difference in vitamin A values of kale, obtained by chemical and biological methods may be due to the incomplete digestion of kale, and resultant incomplete absorption of vegetable carotene in the intestinal tract of the experimental animal.

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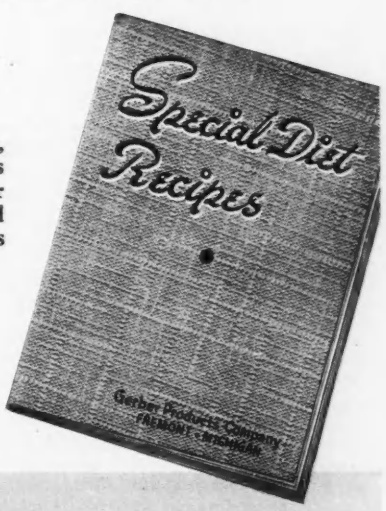

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BAKER'S HELPER

Vol. 85, March 23, 1946

Department store plans novel bakery service. C. Baldwin.—p. 48.
* Outlook for ingredients and supplies.—p. 54.
* Puff pastry method for low-moisture butter. W. E. Broeg.—p. 77.

Bakery Supplies. The quota for fats and oils, except margarine, was cut April 1, 1946, for bakeries to 88% of the base period. Application for increased amounts of sugar may be made if the amount used in 1941 was below normal. A larger allotment of sugar for the housewife will be available in the April-June period. The wheat crop of the world has hit an all-time low since 1929.

Puff Pastry. A new method has been developed to speed up the multiplication of layers of dough. In order to produce a flaky product, the dough must be rolled out and fat spread on two-thirds of it. The one-third without fat is folded over and the other third, covered with fat, is folded over on top of it so that all edges are even. In that way, the third without fat is folded in between the two fat coated layers. The dough is then turned 90° and rolled out again, and the same procedure repeated three times, giving thirteen layers of fat and dough. This method can also be used for Danish pastry. Rolling the dough too thin will prevent a flaky, finished product.

BUILDINGS AND BUILDING MANAGEMENT

Vol. 46, April, 1946

Spring house-cleaning.—p. 21.
Obsolescent thinking today means obsolete buildings tomorrow. E. B. Shannon.—p. 23.
Office planning and layout (part II).—p. 33.
Skilled office planning makes one room do the work of four.—p. 40.
Smart design increases efficiency.—p. 44.
A building manager's outline of modern cleaning methods. R. C. Boyles & R. J. Farguhar.—p. 46.
Federal order restricts building.—p. 60.

CHAIN STORE AGE

Vol. 22, January, 1946

* Chains to spend $519,567,953 for 1946 store modernization. S. O. Kaylin.—p. 14.
Some tax-saving ideas all chains can use. C. M. Edelmann.—p. 17.
Building a promotion for opening a new store.—p. 19.
Lighting the postwar store. V. G. Kling.—p. 21.
British chains face continued controls. J. Brooks.—p. 22.
* Making employees suggestion-minded. J. C. Foster.—p. 23.
Simplified records tell truck operation story. R. A. Bentley.—p. 25.
Stressing human values in employee relations. L. M. Richards.—p. 33.
* Public relations plan "tells all" to the public.—p. 37.

Modernization. Chains expect to spend $519,567,953 for modernization in 1946, 3.9 times higher than 1941's record expenditure and equivalent to 26% of the amount estimated by U. S. Department of Commerce to be spent in 1946 for all private, new industrial, and non-residential construction. Many new stores will replace old ones. New stores and replacements will equal 8.43% of the stores now in operation; 14.25% of existing stores will be remodeled. Variety and department store chains will be first in the amount of expenditure, grocery chains second while drug, restaurant, and apparel follow. Surveys showed 14.32% of reporting chains are air conditioned and an additional 6.17% will be within the year.

Employee Suggestions. That Walgreen employees are alert for new ways to do old jobs better and for new ideas that can be applied to business is shown in the payment of $5,810 to 332 employees for 2,600 ideas for improving company operations. Boxes are placed in major buildings and ideas mailed to the main office. Awards are made personally, the amount depending upon the cost saved and the practical application.

Public Relations. The Dominion Stores Limited, an Eastern Canadian grocery chain, has a basic public relations policy, the development and protection of consumer good-will. It tells its plans, hopes, and activities to the public through large newspaper advertising featuring veterans' letters, outstanding food news, granting an annual fellowship for research in food distribution to Canadian university graduates in business administration, and employee relations including pension plan, hospitalization and other benefits.

CONSUMER'S GUIDE

Vol. 12, April, 1946

Committee of one.—p. 2.
Bread on the waters.—p. 3.
Minneapolis consumers going strong.—p. 6.
Test tube futures.—p. 9.
Watch your woolens.—p. 12.
*Newsletter.—p. 15.
Famine—Wheat—Consumer Service—Science—Woolens—Potatoes—U. S. Grades—Fruit Dessert—Marketing Costs—E lucation—Food
Guide posts.—p. 16.

Vol. 12, May, 1946

Planting intelligence seeds. B. James.—p. 2.
Famine stalks the earth.—p. 3.
Your garden, a famine fighter.—p. 6.
"Food—the last word."—p. 9.
The molecule manipulators.—p. 12.
Two motion pictures.—p. 15.
Using the new flour.—p. 15.
Saving wheat.—p. 15.
Sugar.—p. 15.

Famine. Aftermath of war and droughts have shadowed the globe with famine. President Truman appointed a Famine Emergency Committee of 13 members to formulate guiding policies and from this grew a council of 120 members to lead other organizations. Administrative responsibility rests on the Department of Agriculture, which has appointed state and county managers. Each individual is urged to do his part in saving and producing food, substituting fresh vegetables grown in victory gardens for part of the scarce fats, oils, and cereals, and buying less fats and oils.

Wheat. By sending 6 million tons of wheat to Europe, the United States will assure life instead of starvation to 120 million people. In America, sugar alone remains on the ration list; in Great Britain, rations of fats and eggs are being cut while the extraction rate of flour is increased from 80% to 85%; in Italy, two-thirds of the food eaten is bread, the daily ration being half a loaf daily. It is estimated that while we consume 3,360 calories per capita per day, city dwellers in Europe will live on 2,000 calories and millions will receive less than 1,500 calories per 24 hr. A crisis developed in Europe, because retreating armies left little seed grain; thousands of farms were destroyed and farmers enslaved; there was shortage of equipment and work stock; seed was poor and untreated, fertilizer short, little technical aid available, and weather conditions unfavorable with droughts, floods, typhoons, and storms in different areas. President Truman's measures to obtain wheat for Europe include the lessening of waste food of any kind and the saving of bread; clean plate policy, leftover bread as an extender, buy only when supply is low, keep bread fresh, serve a few slices at a time, use bread crumbs and toasted leftover bread, leftovers in desserts, substitute oatmeal for toast at breakfast and potato at dinner. Use of 80% extraction flour enriched as during the war will furnish more protein in the diet; 20 million bushels of grain will be saved

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by restricting use of grains in production of alcohol and beer. Hogs over 225 pounds will be sold and beef cattle will be marketed earlier in order to save grain, which ordinarily goes to livestock.

Science. Scientists have made fine quality cotton goods from short staple cotton by removing wax, mercerizing, giving washable finish, bleaching, vat drying, calendering, and giving linen finish. Other coarser materials are made from short staple cotton. When elastic cotton is perfected, bandages will be made of a material which will spring back into shape without wrinkling, and better raincoats and rubberized products will be marketed. Paint brushes with bristles made from casein of skim milk will have advantages over Asiatic hog bristles. By midsummer, brushes of low price will be on the market. Concentrated orange juice tasting like fresh and marketed in 5 oz. cans will give 25 oz. palatable orange juice when four parts of ice water are added. Juice will be concentrated to greater degree than desired at first, pasteurized juice added, then water to reconstitute. Product will be refrigerated from cannery to breakfast table. A modified pectin incorporating more water and less sugar for jellies can also be used for fondant in candy containing extra water and half the sweetening. Flavor is good, bulk the same, and just as satisfying as other candy.

Potatoes. Consumer standards have been suggested for potatoes and other products using alphabetical instead of grade names.

U. S. Grades. An investigation by the Ellen H. Richards Institute of Pennsylvania State College consisted of interviewing 1,300 homemakers, after purchases were made. The results showed that the majority of women prefer U. S. grade labeling of goods unless the price difference is great.

Education. A Citizens Federal Committee representing labor, business, agriculture, manufacturing, homemaking, professions, negroes, veterans, and religious groups has been established to advise the U. S. Office of Education on policies and programs of service to education.

Food and Intelligence. It was found that food affected intelligence, in the experiment with the conscientious objectors, who were given the same caloric equivalent as the European diet. The same men that had been reading Aristotle began to read only the comic strips and finally they sank to the point where they were interested in nothing. In people that are in a mental stupor, the four freedoms cannot take root nor can Europe be rebuilt.

HOTEL MONTHLY

Vol. 54, April, 1946

* Banquet food control (Hotel Sherman, Chicago). — p. 41.
*"How about something to eat?"—p. 46.
Four-year hotel and restaurant course started at University of Denver.—p. 64.

Banquet Food Conservation. At Hotel Sherman, Chicago, a program has been inaugurated to reduce food waste. As soon as serving begins, the waiter collects the tickets from his tables and takes them to the checker. The checker records the number of tickets on the waiter's banquet ticket and then he picks up that number of first courses. If the waiter finds more guests at his table when he returns to the dining room, he gives these tickets to the checker and she crosses out the first number and writes in the total number. The waiter picks up the additional first courses. By the time the main course is served, he would have the total number at his station. After a banquet, an audit is made. All banquet tickets collected are counted, and the number of servings for each course are counted. The number served for each course should be the same and the number should agree with the number of tickets collected from the guests. This system also provides a check for the number of guests each waiter served. To conserve food another way, certain waiters are designated to pick up certain food after a banquet, as butter, rolls, and relishes. These are taken to the kitchen and there it is decided if they can be used again and how. This system has proved its value many times in reducing food costs and waste.

The Coffee Shop. The next summer will see the greatest number of vacationists in the history of our country, and it will be up to the hotel man to give them satisfactory lodging and food. After rooms are available, food is the next problem. Labor and food supplies will be the major factors to consider. Food that can be prepared quickly and food that is not too expensive should be featured. A guest arriving late does not want a heavy meal, but something that will satisfy him and can be served in a short time. The next problem is the kitchen crew and equipment to serve the smaller numbers of people at intervals. A split watch that would carry on beyond the regular working period could be used. Several pressure cookers would solve the quick preparation. They are excellent for the less expensive cuts of meat that would be popular with family groups. The hotel man who provides good food with comfortable, clean sleeping quarters will get added business.

ICE CREAM TRADE JOURNAL

Vol. 41, December, 1945

* England's ice cream industry since V-J day. C. Skertchly.—p. 38.
Quality to be stressed by Illinois trade.—p. 44.
* Ice cream industry plans merchandising drive in 1946.—p. 46.
* Manufacturing problems. P. H. Tracy.—p. 68.
* Research—calculating liquid sugar in ice cream. B. I. Masurovsky—p. 72.

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* Legislation. B. Terhune.—p. 32.
* Trends and economies in ice cream flavors. H. A. Ackerman.—p. 40.
* Manufacturing problems. Prof. Paul H. Tracy.—p. 44.
* Research. The peach family of fruits in ice cream. B. I. Masurovsky.—p. 62.
A sound basis for employer-employee relationships. W. J. Bresler.—p. 74.

England's Ice Cream Industry. V-E Day cut Britain's allocation of fat 12½% to ice cream manufacturers and withdrew allocation of skim milk powder. Since victory over Japan, sugar for the industry was cut 33%. Most manufacturers have cut skim milk powder content by 75% and substituted wheat and soya flour to make up for the loss of total solids. Sodium alginate with added salt was found to be superior to gelatine mixes containing wheat flour. Glycerine monostearate is a popular emulsifying agent. Sugar content of ice cream is below 10%. Synthetic banana is favorite flavor, cooked fruits the usual topping. The Ministry of Foods believes ice cream a useful channel through which to increase consumption of milk-solids-not-fat. Sixty to 70% of the total gallonage is made of butter, sugar and skim milk powder, with a resultant high overrun and high fat content. The remainder is made from liquid milk, sugar, corn flour, and eggs, with a resultant low fat content and low overrun, which often causes this product to contain more nourishment than the high-fat product. To avoid high bacterial count, dried egg can be used only under terms of license. Prices are restricted to 50% above 1939 level.

Ice Cream Merchandising. At Merchandising Advisory Board meeting, four points were stressed to reach the billion gallon goal: quality, selling, fair and ethical business practices, and support of International Association of Ice Cream Manufacturers, Dairy Industry Committee, and Ice Cream Merchandising Institute, Inc. "Ice Cream Currents" features subjects of sanitation, cleanliness, personnel training, profit importance, and possibilities, as well as cream dispensing.

The Common Denominator of Reducing Diets

Whether weight reduction is to be brought about gradually, at the rate of a pound or two per week, or drastically at the rate of a pound per day, all reducing diets must recognize one cardinal requirement: the need for protein of the right quality in the right amount.

Unless biologically adequate protein is supplied in the quantity normally required, the living tissue itself would suffer; tissue repair could not be carried on; hemoglobin regeneration would be impaired; antibody formation would be curtailed; resistance to infectious disease would be lessened, and production of enzymes and hormones would fall below the required level.

Lean meat may well be called the common denominator of reducing diets. Its protein content is notably high, and the protein it supplies is of high biologic quality, adequate for every protein need.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED AMERICAN MEDICAL ASSN Council on Foods and Nutrition

AMERICAN MEAT INSTITUTE

MAIN OFFICE, CHICAGO . . . MEMBERS THROUGHOUT THE UNITED STATES

Ice Cream Manufacturing Problems. To avoid excessive viscosity of chocolate ice cream mix, avoid using butter or unfrozen sweetenened cream; avoid pasteurizing temperature above 165°F. if stabilizer is sodium alginate; avoid high acidity of white mix; avoid allowing homogenization temperature to drop below 150°F.; use smaller amounts of stabilizer and lower homogenization pressure than on white mix. If difficulty arises in freezing cream and getting the proper overrun, check refrigeration temperature in freezer, draining of oil trap, freezer dasher, and scraper blades for sharpening.

Liquid Sugar. The use of liquid sugar in manufacturing ice cream products is here to stay because it is adapted to modern production, is efficient and economical and facilitates sanitation. Calculations of formulas are described.

Legislation. The OPA has announced that the allotment of sugar for the second quarter of 1946 will be 60% of the 1941 base. Since July, the quota has been 50%. The quota for industrial users was increased 10%. Until this time, industry was concerned with the amount of sugar to be shipped out of the country. However, the exports for the first 6 months were about half of what was expected. The amount of sugar exported in the future will determine any increases or decreases in the quotas. OPA has required a 2½% drop in butterfat content without a drop in price. It is believed that price control will be extended for a year. The fruit outlook for ice cream for the coming season is better than the past years, since the government is not requiring so much. Eighteen million tons of paper are needed for cartons, but this goal can be reached only if pulp ceiling prices are raised and domestic pulp output extended. Bills affecting the ice cream industry have been passed in several states.

Improved Ice Cream Flavors. Each person has a different opinion about the flavors of ice cream. It is impossible for one person to set up standards for a flavor and say it is the correct one. Flavors in ice cream were not meant to cover dairy products. The first basis of good ice cream is excellent dairy products. Today's practices cannot be used to guide the trend of ice cream flavoring. As in most other industries, manufacturers are using the materials they can get. The trend is toward more mildly flavored ice creams. Manufacturers have learned that heating fruits destroys some of the flavor. Frozen fruits have been found to produce the best flavors. Variegated ice cream made by injecting a stream of sirup or fruit purée into semi-frozen ice cream was made before the war. If this is properly made, the public likes it. There has been an improvement in chocolate ice cream in that more chocolate liquors are used. Ice cream plants now have a special room for preparing the fruits and sirups. There may not be many new flavors on the market, but there will be a definite improvement in the old ones.

Manufacturing Problems. Shrinkage of ice cream is associated with ice cream of fine texture. The total solids, the type of stabilizer, and sweetening agents will affect the shrinkage. A sweetening agent containing a high proportion of dextrose will help to correct this condition. There are no legal maximums for the milk solids content of ice cream today. Plastic cream is regular cream operated at a high fat content, 75–80%. Questions have been sent to the author for formulas for low fat ice cream, for mix containing 20% fat, for a mix containing 11% butterfat, and for a mix using the plastic cream. The writer usually states the formula he has been using and the author gives one he recommends using, considering the products on hand and the conditions prevailing. Sediment in homogenized milk is due to the settling out of leucocytes and other body cells in the milk. There is a difference in the amount of sediment in milk. Animals affected with mastitis can be the cause. By examining the raw milk after it has stood for 24 hours, the origin can be determined. The most satisfactory and time-saving way of removing this sediment is by clarifying the milk after homogenizing. A filter will not do the work, but if a clarifier is not available, a separator will remove many of the particles. These particles are not visible in unhomogenized milk, because they are distributed in the cream.

Peach Ice Cream. In the drupe family of fruits, peach, apricot, plum, and cherry fruits are the most popular for cultivating flavor in ice cream. Peach ice cream is popular in season. Either cold pack or fresh peaches are used in making peach ice cream, but the flavor is so mild that a peach extract is used to give more flavor. Apricots are often blended with peaches to emphasize the peach flavor in ice cream. The Green Gage plum is used in water ices or sherbets. Blue plums can be used in the manufacture of variegated ice cream. The Burgundy type cherry is the most popular in the ice cream industry. Maraschino cherries are used for garnish on sodas and sundaes. Pineapple is used for water ices and sherbets. Orange pineapple is a favorite combination for ice cream. Frozen fruits in ice cream making have become very popular. The manufacturer is able to produce fruited ice cream out of season. The public prefers fruited ice cream with a generous amount of fruit. During the war, the use of frozen fruits was curtailed because of the short supply, but figures show there has been a steady increase in supply. Raspberries, cherries, peaches, plums, and apricots will come in the frozen state.

PERSONNEL JOURNAL

Vol. 24, April, 1946

* Management training program—p.362.
The challenge of annual wages. S. Barkin.—p. 369.
* Ninety years of personnel experience. C. C. Fracker.—p. 374.
Wage administration. E. J. Redmon.—p. 380.
Wage curves. L. Cohen.—p. 384.
Industrial training and testing. H. K. Morgan.—p. 393.

Management Training. Radcliffe now has a management training course for graduate students. During the 10-months course, students have about 3 months full-time apprentice field work. The number of students is limited to 40, but because it has been so successful, the number will soon be increased.

Personnel Experience. There are six important factors to consider in personnel work says Mr. Fracker of the Hamilton Foundry and Machine Co., Hamilton, Ohio: an employee's individual ability; group dealing; application blanks; adequate compensation; ability, merit, and seniority should be considered in promotion.

WHAT'S NEW IN HOME ECONOMICS

Vol. 10, April, 1946

* Flavor in meals has an intricate background. E. A. Wood.—p. 31.
Electric cleaners—their construction and care. L. Leslie.—p. 54.
* Job descriptions for Detroit public school lunchrooms. J. Adams.—p. 129.
Spring comes to the salad counter. M. Trott.—p. 133.

Flavor in Meals. Flavor and appetite appeal of food go hand in hand. Food must be free from tainted or off-flavors to be relished. A person's flavor likes and dislikes are influenced by geographical location, heritage, religious food customs, and psychological factors built through the years. Flavor is a complex blend of many flavors and is perceived through the organs of taste, smell, and touch. The sense of taste is largely responsible for flavor perception, although not entirely so. The primary tastes are sweet, salt, sour, and bitter. Most foods contain a combination of these. A person's ability to determine flavor depends upon his health, degree of hunger, the temperature

So Convenient

FOR USE IN SCHOOLS . . . HOSPITALS . . . RESTAURANTS . . . HOTELS!

The New

FLORIDA PURE CITRUS JUICES IN CONCENTRATED FORM

Just Add Water!

Prepared in a Jiffy! Dietitians and culinary experts in schools, hospitals, restaurants and hotels are discovering how easily and quickly you can make delicious Florida orange and grapefruit juices. Simply add water to Florida's Concentrated Citrus Juices and, presto, you have pure juice full of the refreshing flavor and goodness of the juice you squeeze in your own kitchen!

Save Labor! Save Time! Save Money! Florida's Concentrated Citrus Juices are so economical and convenient to use! There are no high seasonal price fluctuations, no wasted storage space, no handling of bulky crates, no refuse disposal problem, no slicing and squeezing. There are no perishable fruit losses occasioned by decay and crushing.

Preserve Natural Flavor and Vitamins! Perfected during wartime, Florida's Concentrated Citrus Juices faithfully retain the color, refreshing flavor, and healthful vitamins of Florida's finest orange and grapefruit juices! This utterly delicious, pure food product is held in highest esteem by medical authorities and dietitians and is winning wide acclaim from schools, hospitals, restaurants and hotels.

Learn more about this great product, write: Florida Citrus Commission, Lakeland, Florida.

YES, DELICIOUS . . . only selected, tree-ripened fruit is used in Florida's Concentrated Citrus Juices!

YES, NUTRITIOUS . . . rich in all the natural food values and vitamin C of Florida's finest oranges and grapefruit!

FLORIDA *Concentrated* CITRUS JUICES

of the food, and the flavor itself. Odor may be perceived while swallowing food. Everyone has experienced eating when he has a head cold. The nasal passages are blocked and thus the sense of smell is temporarily stopped. Some flavors produce a sense of feeling as they enter the mouth. Spicy and minty flavors are examples. Extremely hot or cold foods do not influence as great a flavor reaction as moderate temperature foods. Flavor makes food work interesting, but there still is much more to be learned about it.

Job Descriptions. In the Detroit public school system, a committee of supervisors was appointed to write job descriptions for all classified jobs. There has been a growing need for this step due to many changes that had taken place over several years. The analysis for the job descriptions was 1. title: 2. duties statement; 3. minimum entrance qualifications; 4. lines of promotion. Titles already in the budget were used as the starting point. During the work, the committee kept in mind the 3 units into which the lunchrooms were divided: food preparation, serving unit, and dish unit. Recommendations for new titles and re-evaluation of work done under the present titles were referred to the directors of the Lunchroom and Personnel Department. Suggestions for changes and additions to existing classifications were approved as inevitable steps in the growth of the staff. Lines of promotion were defined. Promotion must be within the work unit. Job classifications are never done. Reviews must be regularly made. Employee ratings are essential to personnel studies. Job ratings are necessary, too. Job descriptions can provide training for all the classified jobs. Their importance to a successful organization cannot be stressed enough.

Foods in Plentiful Supply

The USDA's current list of foods expected to be in plentiful supply in most parts of the United States includes potatoes, oranges and lemons, onions, carrots, cabbage, and turkeys.

The Department adds that eggs, too, will be in plentiful supply unless the feed shortage causes a greater than expected drop in production; and that both commercial and locally grown fresh vegetables are increasing rapidly in supply. To these may be added fish both frozen and fresh.

The 1945 crop of potatoes totaled 425 million bushels. This was 42 million bushels more than the year before, and 50 million bushels more than the 10-year average. Average per capita consumption in 1943 was 130 lb. On the basis of 140 million population the 1943 consumption figure would indicate total consumption of 303 million bushels. Current estimates place the 1946 early potato crop at from 70 to 75 million bushels, or about 10 million bushels more than in 1945. Farmers have generally overplanted their potato acreage goals. We have and will have plenty of potatoes.

The commercial production of citrus fruits come from California, Florida, Texas, Arizona, and Louisiana. The 1945 production of oranges and tangerines totaled 111,350,000 boxes of around 80 to 90 lb.; and of lemons, 13,900,000 boxes of about 79 lb. This compares with 113,100,000 boxes of oranges and tangerines, and 12,633,000 boxes of lemons in 1944. The drop in the 1945 production of oranges and tangerines compared with 1944's bumper crop is more than offset by 1945 production of 63 million boxes of grapefruit, compared with 52 million boxes in the preceding year.

The early spring production of onions was 4,956,000 sacks (50 lb. each) and the late spring production 3,723,000 sacks. The late spring crop is 70 per cent larger than a year ago, 64 per cent above the average, and exceeds the previous record by 17 per cent. The acreage for the early summer crop is 59 per cent larger than a year ago and 39 per cent above the average. There are plenty of onions.

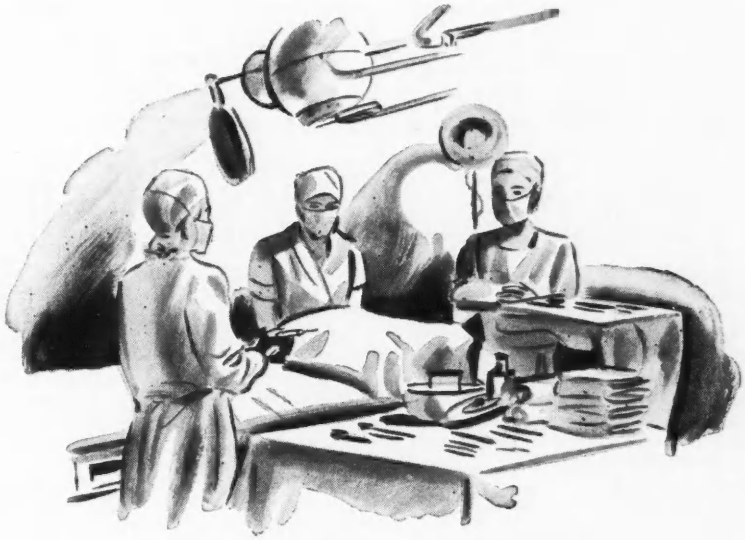
Indicated production of carrots from both the winter and the spring acreage is placed at 13,409,000 bu., compared with 14,327,000 bu., a year ago, and an 8,582,000 bu. average. Percentage-wise, the increase in production stands 63 per cent above the average. Carrots, too, can be used freely.

Early spring production of cabbage was 87,100 tons below last year, but well above the 10-year average of 79,800 tons. However, the largest spring crop since 1938 is indicated by crop reports. Expected late spring production is placed at 77,600 tons, which is 18 per cent over last year and 34 per cent above the average.

Turkeys have been on the list of "plentifuls" ever since last fall when the end of the shooting war and the beginning of demobilization left producers with large numbers of birds intended for use in foreign fronts. Turkeys are augmented by large stocks of other classes of poultry, including broilers, fryers, and fowl due to shortages of feed, and consequent severe culling of farm flocks. In May, the cold storage holdings of frozen poultry stocks were 256 million lb. This was two and a half times normal for that date.

The supply of eggs is directly related to the large numbers of hens still on farms. Severe culling of flocks may reduce the current heavy flow of eggs to market, but present stocks are large. May 1 cold storage holdings of 6.4 million cases were the second highest on record.

While the April out-movement of fishery products from cold storage was heavier than normal, holdings on May 1 were still 43 million lb. above a year earlier and 35 million lb. above the 5-year average. The cured and smoked fishery products supply of 16.5 million lb. added to the holdings of frozen fish raised the total May 1 supply of all fishery products to 92 million lb. We can eat fish freely.



THE ELDERLY PATIENT

As a Surgical Risk

In routine surgical practice, operative procedures in older patients are not infrequently necessary. Abdominal and gynecologic surgery, as well as herniorrhaphies, is often indicated in patients not considered at an ideal age for operative intervention. In these older patients, carefully planned preoperative preparation is required, if time is at all available.

As an integral part of the rehabilitation program, the delicious food drink made by mixing Ovaltine with milk can make a worth while metabolic contribution. Its balanced composition, as indicated by the table below, provides a wealth of essential nutrients in significant amounts. Taken three times daily, this delightful dietary supplement markedly enhances the intake of these metabolic requisites, and aids in improving the patient's ability to withstand the unavoidable trauma incident to surgery and inhalation anesthesia.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILL.

Ovaltine

Three servings daily of Ovaltine, each made of ½ oz. of Ovaltine and 8 oz. of whole milk,* provide:

CALORIES	669	VITAMIN A	3000 I.U.
PROTEIN	32.1 Gm.	VITAMIN B_1	1.16 mg.
FAT	31.5 Gm.	RIBOFLAVIN	1.50 mg.
CARBOHYDRATE	64.8 Gm.	NIACIN	6.81 mg.
CALCIUM	1.12 Gm.	VITAMIN C	39.6 mg.
PHOSPHORUS	0.939 Gm.	VITAMIN D	417 I.U.
IRON	12.0 mg.	COPPER	0.50 mg.

*Based on average reported values for milk.

News Notes

Famine News. The Famine Emergency Committee has released a flood of literature on the current famine situation, and the following are a few items that have been noted:

A Conservation and Collection Drive sponsored by cities has been inaugurated. Mayors of approximately 7,000 cities, large and small, have been asked by the Famine Emergency Committee to form local committees to bring about the greater conservation of food. Other committees, many of them organized somewhat earlier to receive gifts of food and cash, are under the direction of the Emergency Food Collection, organized on behalf of UNRRA.

One Greek Menu. In one dark, empty Greek kitchen, the family dinner consists of brown beans. The following meal is the same. However, sometimes in place of the beans there is macaroni, and perhaps a slice of cheese. Breakfast consists of milk, if there is any available. The food is supplied by UNRRA through the Greek Red Cross.

Famine Arithmetic. Fifty million bushels of grain would provide some 200 million citizens of Europe, excluding Russia, with an increase of 200 calories per day during April through June.

It takes 5 to 6 bushels of grain fed to livestock to give the same food calories given by 1 bushel used for direct food consumption.

Chester C. Davis, Chairman, Famine Emergency Committee, reports that if every person saved one slice of bread a day the saving would be about 10 million bushels of wheat.

Food Saving. The Bureau of Human Nutrition and Home Economics of the USDA has issued some food saving points that dietitians might be able to use. Some of these suggestions are:

One small serving of potato can replace a slice of bread nutritionally, and the potato offers some Vitamin C, besides. An average serving of oatmeal, even without sugar and cream, equals about 2 slices of bread in food value. Use leftover cooked oatmeal as thickening for gravies, soups, and stews. Use cooked or dry oatmeal as a binder in meat loaf, in place of bread crumbs. Serve a Scotch soup occasionally, made with rolled oats, potatoes, meat broth, and savory seasonings. Use cooked oatmeal instead of bread in making fruit betties and puddings. In place of rice pudding, make Indian pudding, which contains cornmeal. Use leftover cornbread in stuffings, and where cornmeal is plentiful, utilize in cornbread, muffins, and griddle cakes. Use pearl barley when available to give body to soups and chowders, instead of rice, spaghetti, or vermicelli. Potatoes or hominy grits should be used wherever possible in place of rice in the main course of the meal. Make potato cakes from leftover mashed potatoes. Let potato salad take the place of sandwiches. Top meat pies and other baked dishes with fluffy mashed potatoes instead of pastry crust. Serve creamed meat, chicken, or fish on mashed potatoes instead of on toast. In pancakes use fresh grated potato to replace a large part of the flour.

To save fats: bake and broil fish, instead of frying. Trim excess fat from meat and poultry before cooking, then render it separately at low temperature and strain. Save cracklings for fat and flavor in cornbreads, muffins, stews, and soups. In making use of saved fats, you may mask the flavor of lamb, mutton, or other such fats by combining with onions or mixed vegetables in soup, or use as shortening for meat pie or in spice cake, gingerbread, cakes, and cookies.

Wheat shipment suspended. Shipment of American wheat to India has already been suspended. Famine there cannot be avoided. The only question is what parts of the country will suffer the most. The members of the Food Board are grimly calling themselves "allocators of starvation."

Bread Facts. Bread absorbs the attention of the world. In Europe, Asia and Africa, the one food most desperately needed is bread. Bread is basic. It is eaten more often and in larger quantities than any other food. It is economical, and the stuff of which bread is most often made—wheat—is one of the earth's hardiest, most versatile gifts. Wheat can be kept indefinitely; it is nature's own dehydrated product; it is easy to store, compact to ship, and it needs no special packaging. It may be poured into the hold of a ship and on arrival can be syphoned off into bins.

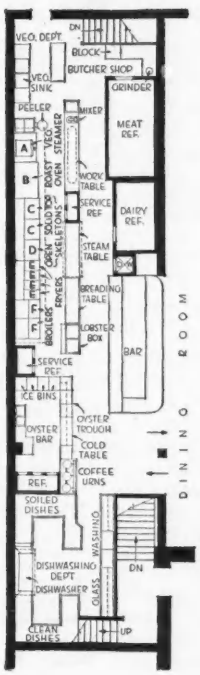
Famine Film. "Suffer Little Children"—a 16 mm sound film, running time, 10 min., is being distributed by the USDA through its field outlets as a part of the program of the President's Famine Emergency Committee. The film is a plea to all to do our utmost to release food for shipment overseas. The picture shows the need of the sick and hungry children of Europe, for aid and comfort. While the majority of scenes depict children in UNRRA responding to the sympathy and care of relief workers, there are also brief scenes indicating that there are still countless millions who are receiving no aid whatsoever. It is these few scenes of children digging through piles of rubble for scraps of bread that so forcefully illustrate the desperateness of the situation. The musical background is composed of arrangements of Greek folk songs which adds to the pathos of the photography. The film ends with the grave commentary that "These children, the sick and starving army of today, will face our children tomorrow—let us hope they meet as friends."

Inquiries regarding distribution of this film may be addressed to the local USDA department, or Brandon Films, Inc., 1600 Broadway, New York 19, N. Y.

Program suggestions for home economists and nutritionists. At the request of Mr. M. C. Wilson, Chief, Nutrition Programs, Food Distribution Programs Branch, USDA, a report has been prepared, by a small group of home economists, which includes suggestions for content of programs, together with an enumeration of methods for organizing and carrying out local and state activities. This report is an important addition to the steps already taken by the government agencies, national organizations, and other groups to secure the support of state and local agencies in the emergency program. A copy of this report may be obtained from the Food Distribution Programs Branch, Production and Marketing Administration, Washington 25, D. C.

BLODGETT

Streamlined "Specialized Cooking Tools" FOR A SERVICE RESTAURANT



COOKING EQUIPMENT USED:

KITCHEN

(a) 1 Vegetable steamer
(b) 1 No. 952 BLODGETT GAS-FIRED ROASTING OVEN
(c) 2 Solid top gas-fired skeleton ranges (tops only)
(d) 1 Open top gas-fired skeleton range (top only)
(e) 4 Gas-fired deep fat fryers
(f) 2 Gas-fired ceramic broilers

BAKESHOP (not shown in drawing)

(a) 1 No. 963 BLODGETT GAS-FIRED BAKE OVEN
(b) 1 Gas-fired hot plate

BASEMENT (not shown)

(a) 1 7 h.p. gas-fired steam boiler (steam for urns, tables, stewers, etc.)

Designed by: The Arbycraft Co., kitchen equipment manufacturers, Philadelphia, Pa. and Stanley Kunzman, gas equipment consultant, Philadelphia Gas Works Co.

The Chelten House, 123 Chelten Avenue, Germantown, Philadelphia, caters traditional Philadelphian cookery to a discerning clientele from this straight line kitchen plan. The No. 952 BLODGETT GAS-FIRED OVEN in use at this installation has two sections, each separately controlled and each equipped with an extra removable shelf. Its capacity is well over 500 lbs. The No. 963 BLODGETT BAKE OVEN will provide six-pan, 36-pie capacity in three independently controlled sections.

Write TODAY for literature!

THE G. S. BLODGETT CO., INC.
50 LAKESIDE AVENUE, BURLINGTON, VERMONT
BLODGETT — Makers of Fine Ovens Since 1848

Potatoes. In times when the talk is all shortages, the USDA announces an abundant potato crop. Official production estimates, through the late spring crop, indicate a production of 52 million bushels at the end of June. Based on current crop conditions, total production up to September 1, may establish an all-time record as high as 70 to 75 million bushels. The use of potatoes is urged as an alternative for the more exportable cereals. Because potatoes often are harvested before reaching full maturity, and the weather will be warm, most of them probably would spoil if we tried to export them to famine stricken areas abroad.

War Bonds. Some interesting facts about sales and redemption of War and Savings Bonds has been released by the Treasury Department. They report that people above the very lowest income levels are still buying and holding bonds. Surveys in the Detroit and Pittsburgh areas showed that during the General Motors and steel strikes, redemption did not rise above the national average, and recently there has been a definite leveling off of redemption.

The statement goes on to say that today some 85,000,000 Americans hold $48.8 billion in those bonds designed for individual purchase. This amount constitutes one quarter of the national debt. Sales to individuals during the Victory Loan Drive, last October through December were 69% in excess of the national debt. Sales for the first 4 months of this year have indicated that sales will exceed redemptions by approximately $1,275,000,000 for the year.

Mrs. Caroline W. Edwards retires. News has reached us from Honolulu, that Mrs. Edwards, director of homemaking and cafeteria service for the Department of Public Instruction, is retiring for reasons of ill health. Mrs. Edwards graduated from Teachers College, Columbia University, and taught household arts in the states until her appointment in 1922 to the territory of Hawaii Normal and Training School, where she was head of the home economics department until September, 1925. At that time, she was appointed director of home economics and cafeteria service of public instruction.

During her 21 years of service, the program in Hawaii, particularly the cafeteria service, became nationally known. One of Mrs. Edwards' services was in connection with emergency feeding during World War II. Preparations for this had been made even before war broke in the Pacific. As a result of her planning and organization of personnel, equipment, and quarters, public schools became essential feeding centers for civilians and war workers after the Japanese attack on December 7, 1941. On the day of the attack Mrs. Edwards' organization was ready. Meals were served in practically every cafeteria of the public schools. Civilians who had been driven from their homes were served nourishing meals, and full cooperation was maintained with other agencies engaged in the production, distribution, and preparation of food

In commenting on Mrs. Edwards' retirement, O. E. Long, superintendent of schools, said, "Mrs. Edwards has been a most effective member of the department staff. Her leadership has been characterized by indefatigable work, unusual thoroughness, a keen interest in the community, and a belief in homemaking as a means of raising standards of living."

The Roles of Hormones in Sterility is the subject of the Schering Drug Company award for 1946. For the best thesis submitted on this topic there will be a $500 award, and subsequent awards of $400 and $200 to the second and third winning entries respectively. The competition is open to undergraduate medical students through the country, and men prominent in the field of endocrinology will judge the contest. This same company has answered a government plea of donations of medical and surgical supplies for the devastated Philippine Islands, by sending $40,000 worth of their drug products to the American Red Cross for shipment overseas.

The American Association of Cereal Chemists met in Niagara Falls, Ontario, May 13–16. Dr. F. F. Tisdall, of Toronto University; Dr. F. C. Bing, of the American Institute of Baking; and Dr. D. W. Kent-Jones, of London, England, participated. On May 15th, a round-table discussion on the milling and baking of 80% extraction flours was held under the leadership of Dr. J. A. Anderson. Dr. Jolger Jorgenson, of Copenhagen, Denmark, presented a discussion on the baking of highly-diastatic rye flour.

B. Lucille Richards, a member of long-standing of the A.D.A., passed away on May 9, 1946. Miss Richards had received her student training at Johns Hopkins Hospital in Baltimore, and at the time of her death was chief dietitian at The Williamsport Hospital, Williamsport, Pennsylvania.

American Institute of Chemists elections. At the annual meeting held May 17th in New York, Dr. Foster Dee Snell, president of Foster D. Snell, Inc., Consulting Chemists and Engineers, was elected president of the American Institute of Chemists. Dr. Joseph Mattiello was elected vice-president; and Dr. Lloyd Van Doren was reelected secretary, with Frederick A. Hessel serving as the new treasurer.

Bread Made from Popcorn. The first few loaves of bread made from popcorn flour ground at a wholesale bakery in Chicago have been demonstrated. The new product is said to taste superior to ordinary wheat bread and to be excellent when toasted. It will sell at a slightly higher price than regular wheat bread.

The June hospital construction issue of *Hospitals* carries three kitchen floor plans for a 50-, 100- and 200-bed general hospital kitchen using central tray service.

Public Relations Health Education. Mount Sinai Hospital in Chicago has been conducting four monthly health education meets. When a topic has been selected by a four-man committee, the hospital department whose work is most closely related is designated host. The sessions are opened with a film and a guest authority presents a half-hour nontechnical talk, aimed principally at benefit and lay volunteer workers and hospital friends. One of the recent topics discussed was nutrition, and Margaret Falstand, Associate Director of the Department of Nutrition of the American Red Cross, was guest speaker. Miss Regina Gottlieb is chief dietitian at Mount Sinai Hospital.

New England Conference. A three-day conference on organization and management for all dietitians, lunchroom managers, and home economics graduates was sponsored by the Massachusetts Dietetic Association at Simmons College, Boston, on June 6, 7 and 8. The sessions fell into the following groupings: Food Production and Service Control; Food Conservation; Efficient Operation and Sanitation; Problems of Management; Public Relations and Food Standards. Film demonstrations and trips rounded out the program.

Frozen Milk. Frozen homogenized milk will hold its fresh flavor for three to four months. It has been successfully used on hospital ships, and in the future it may be shipped to areas where fresh milk is unavailable.

Serve Purest BRAND CONDENSED FROZEN ORANGE JUICE

Always available, always uniform in quality . . . Tastes like freshly extracted orange juice . . . Has natural flavor and is rich in vitamin C.

Many hospitals, hotels and other institutions are discovering the exceptional advantages of serving Purest Brand Condensed Frozen Orange Juice instead of bothering with the messy, laborious, time-consuming, and frequently expensive method of extracting orange juice by hand from fresh oranges.

Purest Brand Condensed Frozen Orange Juice brings you orange juice that tastes exactly like freshly extracted juice and retains the vitamin C and essential elements for health. This new product is amazing for its many advantages and for its superior quality. The juice from selected, tree-ripened fruit is evaporated to one quarter its normal content through a low temperature vacuum process. It is not pasteurized and the flavor remains unchanged. Then it is sealed in tin containers and passed into low temperature tunnels for medium-quick freezing.

Purest Brand Condensed Frozen Orange Juice is available to hospitals, hotels and other institutions in two sizes of containers—the 27-ounce can packed 12 to the case, and the gallon can packed 6 to the case. The 27-ounce can reconstructs into 112 to 115 ounces of drinking juice of approximately 12% solids. The gallon can makes approximately 530 ounces of the same solids content.

To prepare this orange juice for serving requires only a few minutes. Just open the can, pour it into a large mixing container, then add three parts of water. The frozen juice dissolves almost immediately and in melting it cools the drink to a desirable temperature of about 40 F. Then aerate the juice for a moment by stirring briskly or pouring from one container to another, and presto—it is ready to serve.

A gallon of Purest Brand Condensed Frozen Orange Juice will produce as much drinking juice as you would get from a whole box of fresh oranges.

Write today for our descriptive literature, analyses and prices. We will also send you for your own trial a sample can of this product so that you can see for yourself how good it tastes, how easy it is to prepare and serve. Address

FLORIDA FRUIT PRODUCTS CO.

Clearwater **Florida**

Frozen Food Survey. According to the tabulated results of a nation-wide survey by *Quick Frozen Foods*, sales did not fall off at the recent end of canned goods rationing. Customer acceptance is high but would be higher if quality were more uniform. There is a wide divergence in the sales-appeal of various frozen food items, some still being in short supply while others are "cluttering up" the boxes of the merchants questioned. However the results show that the consumer has enthusiastically accepted the frozen food products and looks forward to more items in that line.

Army Dietitians Commended. At a meeting for the Infirmary Fund-Raising Drive in New York, Norman T. Kirk, The Surgeon General, spoke on the fine service of women doctors in the Army, and paid special tribute to dietitians, nurses, and physical therapists who had served in the Medical Department during the war.

Civic Consumer Service. A consumer service started as a wartime measure is continung to give aid to the citizens of Minneapolis. Organized during the war years by the Office of Civilian Defense, this bureau had done an excellent job of keeping consumers informed and ironing out serious consumer problems which had developed under wartime restrictions and emergencies. In the summer of 1945 the government served notice that this organization would be disbanded. But it had played such an all-important role in civic affairs that the Board of Directors voted to transfer the responsibility and sponsorship to the Better Business Bureau and to change its name to Consumer Interests of Minneapolis.

The service carries out an extensive program. Complaints from consumers are registered, investigated, and satisfied daily. Much of this is handled directly by members of the committee who are either the actual heads or managers of businesses or agencies complained against. This cooperation has been most effective and has resulted in happy understandings between consumers and the trade, the government, educational and other agencies. Classes are held in the headquarters for the citizens and among a few of the topics discussed are: how to read scales; fabrics, care and selection; foods, selection, price and use; household equipment, use and care, and home management and budgeting.

Each week surveys are conducted on such subjects as shortages—men's and women's clothing and other commodities—and consumer information. Each week special announcements of the Consumer Center classes are given in the press and over the radio station. It is believed that other cities may soon follow the lead of Minneapolis, and establish centers of their own.

Enrichment of Macaroni and Noodles. The Food and Drug Administration has proposed standards of identity for enriched macaroni and noodle products as follows:

"(1) Each such food contains in each pound not less than 4 mgs. and not more than 5 mgs. of thiamin, not less than 1.7 mgs. of riboflavin, not less than 27 mgs. and not more than 34 mgs. of niacin or niacin amide, and not less than 13 mgs. and not more than 16.5 mgs. of iron (Fe);

"(2) Each such food may also contain as an optional ingredient added vitamin D in such quantity that each pound of the finished food contains not less than 250 U.S.P. units and not more than 1000 U.S.P. units of vitamin D.

"(3) Each such food may also contain as an optional ingredient added calcium in such quantity that each pound of the finished food contains not less than 500 mgs. and not more than 625 mgs. of calcium (Ca);

"(4) Each such food may also contain as an optional ingredient partly defatted wheat germ but the amount thereof does not exceed 5% of the weight of the finished food;

"(5) Each such food may be supplied, wholly or in part, with the prescribed quantity of any substance referred to in subparagraphs (1), (2), and (3) of this paragraph through the use of dried yeast, partly defatted wheat germ, enriched farina or enriched flour, or through the direct additions of any of the substances prescribed in (1), (2), and (3).

"Iron and calcium may be added only in forms which are harmless and assimilable. The substances referred to in subparagraphs (1) and (2) of this paragraph may be added in a harmless carrier which does not impair the enriched macaroni product, such carrier being used only in the quantity reasonably necessary to effect an intimate and uniform distribution of such substances in the finished enriched macaroni product."

Food Packages for Hungry Europe. CARE is the short title meaning "Cooperative for American Remittances to Europe." It is a non-profit organization, approved by the President's War Relief Control Board, and managed by 24 relief agencies of the American Council of Voluntary Agencies for Foreign Service. Through CARE, individuals, groups and organizations in the United States may buy food packages for delivery to relatives, friends, or groups in certain countries in Europe. A typical package contains corned beef, sliced bacon, corn, preserved butter, canned ham, powdered coffee, cereal, jam, and cigarettes. Orders are now being accepted and the price is $15 per package. Delivery is guaranteed to Austria, Czechoslovakia, Finland, France, Italy, The Netherlands, Norway, and Poland. If no specific beneficiary or country is named the food will go to destitute persons or institutions chosen by CARE's overseas representatives in consultation with the local welfare authorities. Application blanks are available at local banks and upon request to CARE, 50 Broad Street, New York 4, New York.

Home Freezing of Fruits and Vegetables is the title of a new USDA booklet, available upon request. Step-by-step instructions on home freezing and the best methods of preserving the summertime freshness and flavor of fruits and vegetables make up this 24-page booklet. Federal laboratory-tested direction on how to seal different types of containers, how to sweeten fruits and prevent them from darkening, how to scald vegetables, and the use of home-made equipment to fill and seal packages are also included.

An accompanying 16 mm, 15 min., motion picture in natural color, titled, "Freezing Fruits and Vegetables," parallels the booklet with a close-up of preparing, packing, and storing of four kinds of food. This film is available for loan from the nation's 72 State Agricultural Extension Services and State University Film Libraries.

Flour Facts. A bulletin containing pertinent facts about America's 80% extraction flour has been issued by the Bureau of Human Nutrition and Home Economics of the USDA. This sheet is presented in a question and answer fashion and should be a valuable aid to teachers. On the same subject, the American Institute of Baking has issued an attractive booklet that is titled, *Information on Bread and Flour Enrichment.* Free copies of this booklet are available by writing the American Institute of Baking, 1135 Fullerton Avenue, Chicago 14, Ill.

New Food Products. The May issue of *Practical Home Economics* carries an interesting list of new food products.

Butter's high place among foods!

Butter has many qualities that explain its pre-eminence as a food.

EVERYONE loves butter's delicious flavor. But its high content of Vitamin A is the factor that gives it prominence on virtually every diet list recommended by physicians, teachers, nutritionists and home economists.

Vitamin A is important to vision, especially night vision. If you drive a motor car at night and suddenly find that you do not see well . . . or if you go into a movie theater and find that your eyes do not readily adapt themselves to the dark . . . you may be experiencing night blindness, the first symptom of lack of sufficient Vitamin A.

Butter is one of nature's abundant food sources of this essential health guarding vitamin and under proper storage conditions the Vitamin A value of butter is unaltered.

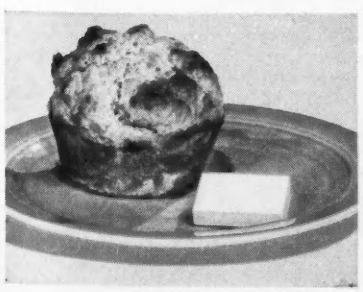
Butter brings much of the nutriment of the cream from which it is churned . . . including 100 calories of energy per tablespoonful. And it adds nourishment and flavor to all foods with which it is served.

NATIONAL DAIRY COUNCIL

EST. 1910 NATIONAL DAIRY COUNCIL

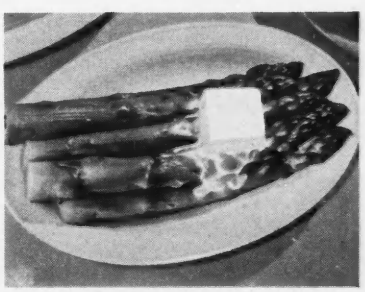
111 North Canal Street, Chicago 6, Illinois

A non-profit, educational organization promoting national health through a better understanding of dairy foods and their use.



Muffins . . . irresistible when served with *butter*.

Baked Potato, more delicious and more nourishing when served with *butter*.



Vegetables . . . with *butter*, become temptingly tasteful.

Noted among them: frozen french fries—these are precooked, sliced potatoes, packaged in 10-ounce cartons. From the package to table requires only 20 minutes cooking time. Flavor and texture are reported to be excellent. Pineapple pudding for baby—a pineapple pudding made with milk, eggs, and pineapple juice has been added to the growing list of prepared baby foods. It is packaged in glass which serves both as a serving and refrigerator dish. Canned porridge—pre-cooked oatmeal packed in hermetically-sealed pound tin cans is an innovation. One simply heats the porridge and serves it. Canned jellied fruit dessert—civilians will soon be able to buy canned desserts formerly available only to the armed services. These jellied desserts come in a variety of flavors and are reported to hold flavor, color, and texture in both hot and cold climates. Tablets of tea—tea compressed in tablet form is now being sold in England. It is reported that a strong brew can be obtained with less tea and at a much lower cost.

Food Waste in the School Lunch is discussed in an article in *Practical Home Economics*. The article points out that the children of America have responded to the school lunch directors' appeals for clean plates when they realize that waste in this country means starvation for children abroad, but food saving also starts in the kitchen. Better planning, better buying, better sorting, better cooking and serving will save tons of food now wasted every day. A review of school lunch practices at this time will reveal many ways where waste can be reduced to a minimum. Menu planning takes on an even more added importance. The old rule of "please the palate" must in some measures give way to the necessity for all of us to cultivate a liking for different foods in terms of what is available for good nutrition. If the managers, the workers, and the children all unite in seeing that no unnecessary wastes occur, they are being a tremendous factor in promoting food conservation.

Ruth M. Kahn has recently returned from service with UNRRA, having spent several months in Germany.

Birth. Marjorie Boyd Bernstein has announced the birth of a boy, Robert Boyd Bernstein, on May 19, 1946, in Flint, Michigan. Mrs. Bernstein was formerly overseas with a U. S. Army Medical unit.

American Red Cross Appointments. Dr. Courtney M. Smith has been appointed the new medical director for the ARC. He succeeds Dr. G. Foard McGinnes who steps into the position of vice-chairman for health services.

Mrs. Mary Williams Buckardt has been appointed the new assistant administrator on the national Red Cross staff. In this position she will serve as national director for the Red Cross corps for arts and skills, dietitian's aide, hospital and recreation and volunteer nurse's aide. Mrs. Buckardt is a graduate of the University of Illinois and the wife of Henry L. Buckardt, civil service administrator attached to General MacArthur's staff in Tokyo.

Thirty-first Annual Meeting of the Catholic Hospital Association. The convention was held in Milwaukee, June 10–13. Lucille Refshauge, educational director of the A.D.A., presided at a section meeting on dietetics. The A.D.A. sent an educational exhibit, featuring publications of the Association. The booth was set up and maintained by members of the Milwaukee Dietetic Association.

Alabama Dietetic Association. The list of newly-elected officers, quoted in the June issue of the Journal was incorrect. The officers listed were those currently in office. The following is the correct roster for 1946–47: Mrs. Elizabeth Slater Seay, president; Eunice Shaw, president-elect; Lucille Gaultney, vice-president; Elizabeth Jacobs, secretary; Lorene Grant, treasurer.

California Dietetic Association. The May issue of the *Bulletin* of the California Dietetic Association, the convention number, was introduced by. . . . "This, too, spells progress. . . . The expanding fields of dietetics in California." New horizons for dietitians unfold throughout the *Bulletin*. Photographs of state officers, chief dietitians in hospitals, clinics, colleges, school cafeterias, and industrial concerns are included, as well as photographs of nutritionists in health agencies. These all lend personal features to the *Bulletin*. Each write-up is accompanied by scenes from the various dietary departments and general views of the institutions where the members of the California Dietetic Association are employed. Of special interest, too, is the report of the student dietitian training program of the Veterans Hospital at Los Angeles. This course was recently inspected by Lucille Refshauge, educational director for the A.D.A.

Two official publications of the California Dietetic Association are announced in the *Bulletin: Salary Schedules and Personnel Procedures for Dietitians*, and *Compilation of Diets*.

Officers of the California Dietetic Association elected for 1946–1947 are: President-elect, Helen Hawver, Stanford University Hospitals, San Francisco; vice-president, Clancy L. Morrison, Occidental College, Los Angeles; secretary, Evelyn Langenwalter, Children's Hospital, Oakland. Margaret Anderson, Scripps Metabolic Clinic, La Jolla, will serve as president next year.

Gertrude Miller, formerly of Children's Hospital in Los Angeles, recently assumed her duties as instructor of student dietitians at Veterans Hospital, replacing Mrs. Helen Cahill who is now chief of the dietetic division in Veterans Administration Branch Office No. 12, in San Francisco. Katharine Brown, formerly a Lieutenant in the WAVE's, has returned to her position at Moore-White Clinic in Los Angeles.

Delaware Dietetic Association. Fern Brown, president of the Delaware Dietetic Association, presided at a recent dinner meeting held in Wilmington. Dietitians and nutritionists representing the hospital, college, teaching, school lunch, industry, public health, and agricultural fields were present. Helen E. Walsh, chairman, community nutrition section, A.D.A., was guest speaker.

District of Columbia Dietetic Association. The first annual meeting of the District of Columbia Association held in the Mayflower Hotel, May 11, marked the highlight of the year for this association. It was an outstanding success because it brought together many groups of women from the field of home economics. The variety of subjects and exhibits included on the program met the diversified interests of all who attended. Capt. Katharine Manchester, MDD, Office of the Surgeon General, planned the program and Georgia Smith, Chesapeake & Potomac Telephone Co., Cafeterias, was business chairman.

This all day meeting was attended by approximately 300 dietitians and members of allied professional groups in the District, Maryland, and Virginia.

[Mrs. Doris B. Sutton, president, was responsible for the inauguration and overall planning of the annual meeting. Mrs. Sutton, who is dietitian at St. Elizabeth's Hospital, presided at the morning session. Section reports were read and excerpts were quoted from an article written for the meeting by Mr. Owen Webber, titled, "Some Points of Food Service Equipment for Hospitals." Speaking at the morning session, Miss Helen E. Walsh, nutritionist, U.S. P.H. Service and Chairman of the Community nutrition

HOW TO PLAN
Reducing Diets
EASY FOR PATIENTS TO STICK TO!
No matter how sound the diet, if a patient won't follow it, it won't work.
But you *can* plan reducing diets acceptable both to you and the patient. You'll find Knox Gelatine a big help here.
Knox Gelatine is all protein, no sugar.
Knox salads and desserts add variety and interest to restricted diets. Many contain high residue, low-calorie foods and so help stave off hunger.
Drinking Knox in water or dilute fruit juices between meals is another good, low-calorie way to combat hunger and make dieting easier.
In diets where supplementary protein is indicated, Knox is of special value.
FREE Diets and Recipes
A practical and authoritative booklet containing tables of food values, diet list, sample menu, and delicious, low-calorie gelatine recipes will be sent FREE *upon request to Knox Gelatine, Johnstown, N. Y.*
KNOX GELATINE (U.S.P.)
PLAIN, UNFLAVORED GELATINE...
ALL PROTEIN, NO SUGAR
KNOX
SPARKLING
GELATINE

section, A.D.A., discussed "Briefing American Dietetic Association Plans."

Ida Jean Kain, nutritionist and newspaper writer, whose syndicated column is published in the United States, South America, Canada, Puerto Rico, and Mexico, was guest speaker at the luncheon. She contributed a full share of that extra vitamin Z, zest for living, which she so highly recommends for dietitians, into her speech on "Balanced Life of the Dietitian." Grace Bulman, director dietetic service, U. S. Veterans Administration, presided.

Major Helen C. Burns, AUS, director of the dietetic consultant division, Office of the Surgeon General, presided at the early afternoon session. Mr. W. R. Hoover, food service technician and food equipment designer for Clyde Hagerty Company, discussed "Present Versus Future Equipment." The film, "Dishwashing Dividends" was shown and Lt. Florence Berger, MDD, discussed "Diet in Infectious Hepatitis," a subject on which she had done much research in the Mediterranean Theater of Operations.

Mrs. Anne Miller, secretary of the association, introduced Mr. Dallas Smith, director of personnel and public relations and Miss Augusta Clawson, director of training and employee services, both of Government Services Inc., and their subject was "Personnel Administration Today and in the Future."

Dr. W. R. Aykroyd, a member of the FAO and director of research in India from 1935–45, was guest speaker at the dinner. He discussed, "Problems of Nutrition in Poor Countries."

Extracts from the Section Report article, "Some Points on Food Service Equipment for Hospitals," and a report of the talk by Miss Walsh will be included in the current issue of the D. C. Dietetic Association Bulletin.

Iowa Dietetic Association. At a recent two-day session of the Iowa association, Dr. Rubin Flocks, associate professor of urology at the University of Iowa Hospitals, spoke on the "Use of Diet in Kidney Stone Cases." Information on mineral metabolism was also presented by Dr. Genevieve Stearns, research professor in pediatrics at Children's Hospital, Iowa City. At the meeting, Edna Shalla, a past president of the Iowa association, was chosen as a fourth member to the House of Delegates of the A.D.A. At a later session, Dr. Pearl Swanson, research professor in nutrition at Iowa State College, discussed some new concepts of protein metabolism based on studies dealing with the nutritive value of eggs. The meeting closed with four reports on graduate research. The subjects and speakers were: "The Role of Eggs in Protein Metabolism," by Helen Clark of Iowa State College; "Studies of Diabetic Patients on Normal Diets," reported by Evelyn Brandt; "Research with Frozen Meats," by Elma Crain of Iowa State College; and "The Effect of Ultra Violet Radiation, Mechanical Filters and Chemical Sprays on Mould Growth in Refrigerators" which was presented by Geraldine Leisch of University Hospitals, Iowa City.

The first issue of the Iowa Dietetic Association Bulletin appeared in April. Volume 1, Number 1, carried messages from the new president, Edna E. Kenney, and the retiring president, Elsie Ann Guthrie. News accounts of members and introductions to the state officers comprised this excellent bulletin.

Kansas Dietetic Association. Through the committee on professional education, the Kansas Dietetic Association has been sponsoring a recruitment program that has reached 2500 Kansas girls. Virginia Monahan Bayles and Norma Jean Geiger, of the University of Kansas Hospitals, have presented talks and skits explaining dietetics to girls in 16 high schools throughout Kansas. This program has been undertaken to stimulate interest in the college enrollment in dietetics. Junior colleges were suggested for the first 2 years of work because of the crowded conditions at the state colleges, and also to lessen the cost of the 4 years education.

Fifteen hundred copies of "Dietitians are Urgently Needed" have been distributed, according to Mrs. Bayles, and at each school, a copy of "Dietetics as a Profession" has been presented to the library of the Home Economics classes.

Large posters with mounted pictures of dietitians at work in hospitals, army, veterans and administrative food services were used to illustrate the skits, and huge enlargements of dietitians at work gave added color to the talks. The posters were obtained from the A.D.A.

Louisiana Dietetic Association. The annual convention of the Louisiana Dietetic Association was held in Shreveport, May 2 and 3, in conjunction with the state meeting of the Louisiana Hospital Association. The meeting opened on May 2nd with registration at the Washington-Youree Hotel. Mrs. Bessie Brooks West, president of the A.D.A., spoke at the first meeting on the scarcity of trained dietitians. Although this scarcity does now exist, figures show that more young people are training in colleges for a dietetic career. Other speakers were Mrs. Louise G. Fry, superintendent of Tri-State Hospital, and Dr. O. P. Daley, director of Charity Hospital in New Orleans.

Mrs. Fry said that dietitians should be acquainted with all departments of hospital work and should be in close contact with medical workers. "The dietitian should feel the direct responsibility she has for the welfare of the patients whose diets she supervises," Mrs. Fry stated.

Emphasizing the importance of the hospital dietitian, Dr. Daley spoke on the fact that the doctor expects the dietitian to be interested not only in foods but in all matters of health and medicine. He added that the dietitian is considered a very vital part of the hospital personnel.

The Mayor of Shreveport, Sam S. Caldwell, opened the convention with an address of welcome, and the delegates were conducted on a tour of Shreveport before the business sessions began.

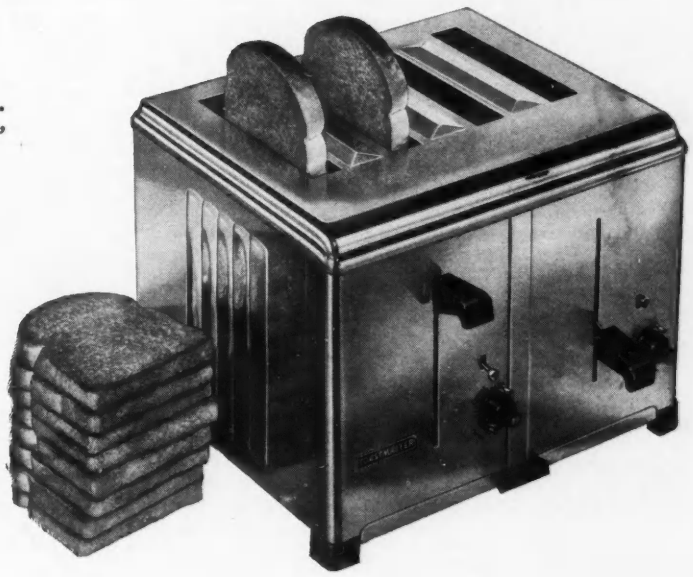
Highlight of the second day of the meeting was a round-table discussion with Mrs. West as leader. The subject—"Dietitian's Responsibility for Community Nutrition Education" with the following representatives contributing: Bernes Larson, dietitian in a city board of health; Dryden Quist, dietitian in industry; Edith Holt, dietitian in the public schools; Irma Jean Ruby, dietitian in the clinic; Dorothy Moschette, dietitian in the business world; Agnes Blazek, dietitian in the hospital, and Caroline Dreyer representing the dietitian in college.

Officers in the Louisiana Dietetic Association are Anna B. Wilson, Shreveport, president; Dryden Quist, Baton Rouge, vice-president; and Chloe Robinson of New Orleans, secretary-treasurer.

Michigan Dietetic Association. Battle Creek was the site of the May 17th and 18th meeting of the Michigan Dietetic Association. Mable MacLachlan, president-elect of the A.D.A., was honored at a dinner the first day of the meeting. She spoke on "Dietitians as Leaders." Two past presidents of the national association, Mary I. Barber and S. Margaret Gillam, were prominent guests at the two-day session. Miss Barber served as state press relations chairman and Miss Gillam addressed the meeting on "Effective Remodeling of an Institutional Kitchen." Two "international" guests were Ana Victoria Jeremenez of Puerto Rico and Dr. Alfredo Riquelme, head of the Division of Nutrition and Public Health in Chile. Welcomed back from the war zones was Cathryn R. Ver Murlen, one of the dietitians who was awarded the Bronze Star for

"Hm . . . over 1,000 slices per hour . . . and less than 2 feet of counter space"

BIG toast capacity in SMALL space . . .



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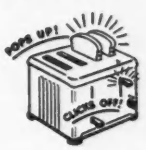
Order *now* from your food service equipment dealer and get yours *sooner*. Big-capacity "Toastmaster" toasters that pop up 125 to 1,000 slices per hour (there's a model to suit every volume need) are in big demand. But we're making many more toasters than ever before so that you may get yours more quickly. When you do, you'll agree that the *one* best buy in toasters—the brand that bears the "Toastmaster"* trademark—was well worth waiting for. Order yours today!

EVERY SLICE PERFECT!

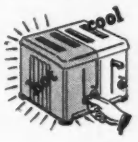
Toast is never underdone or burned. Makes the same golden-brown toast that millions get at home.

COMPLETELY AUTOMATIC!



The instant toast is done to golden-brown perfection, slices pop up and the current clicks off!

ECONOMICAL!



Uses current only while toasting. And *only* in the slots at work. No current waste; no preheating.

FLEXIBILITY, TOO!

You can add units economically, one at a time, as you need more toast. All 8, 12, or 16-slice models are composed of 4-slice units.

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TOASTMASTER Toast

The National Habit Wherever Folks Eat!

unusual service to her country. Irene Boelts of "Willow Run" (England) fame was also present.

Adelia M. Beeuwkes, president of the state association and member of the University of Michigan public health staff, keynoted a stimulating program. In part she said ". . . food enough for the people of the world is a part of the answer to most of our postwar problems, and members of the Michigan Dietetic Association can help to feed a few of these people of the world by *saving* as well as *serving* food."

The business meeting was concerned with the Rivers Bill to permit the sale of margarine without the federal tax. The association went on record as recommending its passage, and many of the members planned to write as individuals to their congressmen. Mrs. Alda M. Stull told the of Grace Hospital's plan for additional camp facilities for diabetic children. This hospital has had such a camp for some time. Mrs. Ethel Flower, chairman of the committee that arranged the two-day meeting, is president-elect of the Michigan Dietetic Association.

University of Michigan. During June 5th and 6th, the School of Public Health, University of Michigan offered an inservice, noncredit training course. This course was designed to present a comprehensive review and interpretation of recent advances in our knowledge of the relation of nutrition to maternal and child health. It was especially planned for the benefit of public health nutritionists, pediatricians, and obstetricians. Dr. Frederick F. Tisdall, Toronto School of Medicine presented a paper on "Nutrition in Pregnancy"—a Toronto experiment. At this same session, Mrs. Bertha Burke, from the School of Public Health, Harvard University, discussed "Maternal Nutrition and Its Effect on the Infant." At a later session, Dr. John Parks, George Washington University, spoke on "Prenatal Care and Breast Feeding." Dr. Josef Warkany, Children's Hospital, Cincinnati, described his "Experimental Studies on Congenital Anomalies." Marjorie Heseltine, Children's Bureau, Washington, D. C., presented a paper on "Education for Better Maternal and Child Nutrition." At the evening session, Dr. P. A. McLendon, George Washington University, reported on "Hospital Practices and Infant Nutrition"; and Dr. Samuel Levine, Cornell Medical Center, New York City, described his studies on "Feeding the Premature Baby." Group discussion on breast feeding, child health conferences, prenatal and fathers' classes, and the psychology of child feeding were held the second day.

Minnesota Dietetic Association. The meeting of this state association was held in conjunction with the Minnesota Hospital Association at the Hotel Lowry, St. Paul, Minnesota, on Monday, May 27th and Tuesday, May 28th. The general theme of the convention was "Challenge of the Future."

The first afternoon Harriett Warmington, president-elect of the Minnesota Dietetic Association, participated in a panel discussion which included all allied hospital groups.

On May 28th the association had an excellent all-day program with a fine attendance, which included dietitians from all parts of the state, student dietitians from approved courses, and home economics students from several of the colleges. Ruth Nickel, of St. Mary's Hospital at Rochester, and president of the Minnesota Dietetic Association, presided at the Tuesday meeting. The program was timely in that it emphasized the world food emergency situation from several angles. Barbara Sampson of General Mills, spoke on the "Highlights of the Flour Changes." Mrs. Elizabeth Swets of Amsterdam, Holland, described in a very graphic fashion the "Food Conditions in Holland" during World War II; Dr. Oscar B. Jesness, University of Minnesota, emphasized "The World-Wide Food Situation" from the agriculturist's viewpoint; Dolores Nyhus of St. Mary's Hospital, Rochester, spoke on an "Outline for Teaching Student Nurses." She gave the background material leading up to the present outline which the A.D.A., is recommending and gave a description of one lesson to illustrate its use. Dr. J. H. Tillisch, Mayo Clinic, Rochester, spoke on "Diet in Aviation" describing research work which had been done during World War II and the effect that diet has on persons at high altitudes. Mr. Charles H. Peterson, United States Government Training Within Industry Program, spoke on "Techniques in Job Instruction."

A business meeting was held following the talks, and plans for future activities were made. A tea was given by the Twin City Dietetic Association at the Women's City Club, St. Paul, honoring Mable MacLachlan.

About 100 people were present at the luncheon meeting to hear Mable MacLachlan, president-elect of the A.D.A., speak on "Our National Association."

At the final meeting of the Rochester Dietetic Association, Mrs. Alice Irmisch reported to her fellow members on her travels throughout the United States. Betty Grace Antony, formerly associated with the dietary department of the Cook County Hospital, Chicago, has joined the staff of St. Mary's Hospital at Rochester. Miss Antony received her B.S. degree from St. Benedict's College, St. Joseph, Minnesota, and interned at Michael Reese Hospital, Chicago. Officers elected for the coming year were: Mildred Skalitzky, president; Dolores Nyhus, vice-president; Charlotte Ludwig, secretary-treasurer; and Marian Helbing was elected parliamentarian.

The newly-elected Twin City Dietetic Association officers are: Lois Murray, president; Angeline Mannick, vice-president; Mary Lou Dunkerley, treasurer; Catherine Zander, secretary; and Elizabeth Boyer, delegate-at-large.

Missouri Dietetic Association. The food administration section of the Missouri Dietetic Association is working on two national projects: Project 1, "Equipment Requirements and Standards for Kitchens in Seventy-five, One Hundred Fifty, and Three Hundred Bed Hospitals or Institutions Serving an Equivalent Number of Persons," and Project 4, "Planning the Postwar Kitchen." The following dietitians have made reports on these projects: Sister Mary Carola, S.S.M., St. Mary's Hospital, St. Louis; Mrs. Esther Washington and Grace Claussell, General Hospital No. 2, Kansas City; Esther Ratliff, Menorah Hospital, Kansas City; Marita Monroe and Janet Butterworth, University of Missouri, Columbia; and Ruth Hawkins, Trinity Lutheran Hospital, Kansas City.

In the diet therapy section, work has begun on the national project: "Low Sodium Diets with Emphasis on the Calculation of Sodium." At the completion of this study the committee plans to work on the "Survey of Food Tables Used by Hospitals for Calculating Quantitative Diets." Members of this section are: Susan Tillery, Ellis Fischel, State Cancer Hospital, Columbia; Marilyn Miller, St. Luke's Hospital, Kansas City; Clarisse Dean, University Hospital, Columbia; and Mrs. Ruth Hawkins, Trinity Lutheran Hospital, Kansas City.

The community nutrition section committee has been directing its work to nutrition education in four branches: bread enrichment, radio publicity, school lunches, and schools of social work. The latter project has been carried out in conjunction with the social welfare and public health section of the Missouri Home Economics Association and the Missouri Association for Social Welfare.

The professional education section has continued its participation in Project 3, "The Evaluation of the Outcome of the Teaching of Nutrition to Student Nurses." A small workshop has been formed, and meetings are to be held throughout the early part of the summer to construct and compile test items. Some of these items, which have already been constructed, will be distributed to teaching

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dietitians throughout the state for criticism and evaluation. Another pertinent problem that the section is working on is recruitment. A new series of broadcasts is planned. These broadcasts will tell of the work of the dietitian. Copies of *Dietetics as a Profession* are being distributed throughout the state after personal contact has been made with the students or organizations.

Nebraska Dietetic Association. The institutional directors and dietitians of the Lincoln Dietetic Association recently entertained four of their departing members: Rebekah Gibbons, Carrie B. Moore, Sylvia Simon, and Mrs. Virginia Anderson Van Meter. The four members have made the following changes: Dr. Gibbons has resigned her position at the University of Nebraska and will make her home at State College, Pennsylvania; Carrie B. Moore, who has been associated with the Green Gables Sanitarium for over 20 years, has retired and plans to make her home with her family in Virginia; Sylvia Simon, formerly on the staff of Union College, Lincoln, has accepted the position of food manager at Lindenwood College; Mrs. Van Meter, formerly with the Residence Halls, University of Nebraska, leaves for California to join her husband who is in the armed service. The Lincoln dietitians have elected the following officers: Leta Linch, president; Alpha Thompson, vice-president; Lucille Backmeyer, secretary, and Arlene Luthi, treasurer.

The Omaha dietitians entertained the Lincoln chapter at a dinner at Omaha University, and the guest speaker of the evening was Dr. Victor Levine, who discussed "The Impact of War upon World Nutrition."

New Hampshire Dietetic Association. The anniversary meeting of the New Hampshire Dietetic Association was held in Keene on May 9, with Millie Osgood, president, and Vivian Rockwood, chairman of the professional education section, acting as hostesses. Guest speaker was Mary Kelly, cafeteria manager for Aetna Life Insurance Company of Hartford, Connecticut. At an earlier spring meeting the New Hampshire Association was honored by a visit from the president-elect of the A.D.A., Mable MacLachlan.

North Carolina Dietetic Association. Mrs. Elsie W. Martin, Duke University Hospital, and Tiphaine Burgess, Watts Hospital, were appointed chairmen for the annual meeting to be held at Durham, it was decided at a recent executive board meeting at the Charlotte Memorial Hospital. Evelyn Gibson, recently separated from the U. S. Army, has accepted an appointment at Jefferson Hospital, Roanoke, Virginia. Sara Boyd Pickett, formerly dietitian at Rowan County Hospital in Salisbury, is now associated with the Chatham County Hospital at Elkin. Lt. Mary Helen Hagaman, M.D.D., is now at the Station Hospital of the Walla Walla Air Base, Walla Walla, Washington. Virginia Powell, formerly of Duke University, is now assistant dietitian at Woman's College, Greensboro. Rosina Vance has been appointed director of dietetics at Bowman Gray Medical School and Baptist Hospitals, Inc., at Winston-Salem. Cora Gray has returned to active professional work to accept the temporary appointment of assistant in the Department of Home Economics at Woman's College in Greensboro.

Announcement has been made of the engagement of Ruby I. Thompson, assistant in the dietary department at the State Hospital, Morganton, to Lt. (j.g.) John O. Hooper, U.S.N.R., of Saluda, N. C.

The State Hospital at Morganton in cooperation with the Woman's College in Greensboro is continuing for the fourth year its summer project work for senior student trainees.

Ohio Dietetic Association. The Cleveland Dietetic Association held its last meeting of the year on May 8, at City Hospital. Lucille Refshauge, educational director of the A.D.A., was guest speaker. Miss Refshauge gave a resumé of the many duties and services of the executive board and told of the material available at the Chicago headquarters. Elections were held and the officers for the next year are: Frances Langenbacher, president; Carol Cornel, president-elect; Phyllis Feffers, vice-president; Ruth Van Sickle, treasurer; and Eleanor Tomsik, secretary. Raizelle Schneider, Emily Shell and Kathleen Bollingbroke comprise the nominating committee.

The Dayton Dietetic Association reports that Verdi D. Miller, former chief dietitian at the Veterans Administration Hospital in Dayton, has been appointed chief of the dietetic division for the administration branch office at Columbus, Ohio. Miss Miller will supervise dietetic activities of the VA hospitals in Ohio, Michigan, and Kentucky. Mrs. Evelyn H. Mahoney has resigned her position at the St. Elizabeth Hospital and is now living in Chicago. Aura D. Louhi, former Army dietitian at the Regional Hospital at Patterson Field, has accepted a position at the Hospital of the Good Shepherd, Syracuse, New York. Mildred Miller has accepted the position of supervisor of the dining rooms for the Elder and Johnston company. Lt. Dorothy Downing, dietitian at the Patterson Field Regional Hospital, was transferred to Dayton after 18 months at the Davis-Monthan Field Hospital in Tucson, Arizona. Mrs. Betty Crandall Heigert, formerly stationed at Wright Field, is now associated with the Frigidaire Corporation. Henriette Pribnow, director of the department of nutrition, Miami Valley Hospital, will be president of the Dayton Dietetic Association this coming year.

Oklahoma Dietetic Association. The Oklahoma City dietitians met April 29, at the St. Anthony Hospital, and their guest speaker was John Eskian. Mrs. Marguerite Wilkins with Sky Chef, Inc., has been transferred from Oklahoma City to Fort Worth. She is working, at present, on the standardization of recipes. D. Katherine Stowell is the new assistant dietitian at St. Anthony Hospital. Miss Stowell is a graduate of Kansas State College at Manhattan, and of the Beth Israel Hospital Course for student dietitians. She was formerly dietitian at Patterson General Hospital, Patterson, N. J. Marjorie Manning, a graduate of Oklahoma A. & M., has accepted a position at the Scott and White Hospital, Temple, Texas. Maxine Klein, former head dietitian at the College Cafeteria, was recently married to I. J. Traynor. Mrs. Mary Alice Morris has resigned as personnel director of the College Foods Units to be with her husband who has returned from overseas.

South Carolina Dietetic Association. The South Carolina White House Conference, part of a national movement initiated to promote the greater participation of qualified women in public affairs, recently held its second annual meeting. The South Carolina Dietetic Association was invited to join the Conference and thus become one of 25 state women's organizations to be so honored. The history of the formation of the White House Conference dates back to June, 1944, when the General Federations of Women's Clubs, consisting of 200 women representing 75 national organizations, submitted to Mr. Roosevelt and the State Department a roster of names of women they believed were fitted to serve on national and international boards and commissions. As a result, the states were invited to participate by forming their own White House Conference to be headed by the state governor. The governor of South Carolina requested that each organization submit a list of names of four outstanding women to be chosen for specific positions. Members of the South Carolina Dietetic Association who were selected

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under this arrangement were: Ada Moser, Home Economics Research Department, Winthrop College; Julia Obenshain, Toumey Hospital, Sumter; and Elizabeth Burriss of the University of South Carolina Cafeteria at Columbia.

Plans have been made to start building up a reference library in the state association office. When completed this collection can be used both as a reference and lending library for members.

An executive committee meeting was held in March to replace officers who had left the state after the election. The officers installed as a result of this meeting were: Roberta London, president; Doris Patteson, vice-president; Mildred C. Meyer, secretary; Elizabeth Burriss, treasurer; and Marjorie Prince, project chairman.

Texas Dietetic Association. The Texas Dietetic Association held its first postwar convention in Houston on May 10th and 11th at the Rice Hotel. Members of the South Texas Association were hostesses for the group. An interesting and stimulating program was prepared by Irene Pope Hardy, Rice Institute, Houston, program chairman, and her committee. The president of the American Dietetic Association, Mrs. Bessie Brooks West, was present. At the opening session of the meeting she was introduced by Mrs. Blake Bryson Patrick, president-elect of the Texas Association. Mrs. West spoke to the group on "Our Association" and again later on "What Is a Dietitian?" She urged members to take an active role in recruiting members to the profession because of a dwindling supply of dietitians in this nation. This leaves an open field of opportunity for high school and college students seeking careers. She further discussed the military status of dietitians and legislation before Congress which is of vital interest to all in the field of nutrition.

Several excellent papers were read during the two-day meeting. "The Low Sodium Diet in Hypertension" was given by Dr. Arthur Grollman, head of the Department of Experimental Medicine, Southwestern College, Dallas. A paper was read on "Newer Trends in Nutrition" by Florence I. Scoular, North Texas State Teachers College, Denton. Natalie Kneeland, teacher trainer in distributive education, University of Texas, Austin, discussed "Personnel Problems Involved in Supervision."

Helen Osoba, president of the South Texas Association and a member of the staff of Memorial Hospital, Houston, presided at a round table discussion of "New Ideas." During this meeting Ruth Cooper, Gulf Brewing Company, Houston, discussed the use of beer in cooking. Virginia King, The Snack Shop, Houston, presented "The Problems of Personnel Training." "Equipment for a New Feeding Unit" was given by Nell Morris, Texas State College for Women, Denton.

An instructive trip was made to the new Naval Hospital, which is under construction, to see the kitchen arrangement and latest and best equipment.

At the business meeting of the Texas Association presided over by President Laura McLaughlin, Texas State College for Women, Denton, officers for the coming year were elected: President-elect, Frances Low, Methodist Hospital, Houston; vice-president, Frances Welch, North Texas State Teachers College, Denton; secretary, Helen Osoba, Memorial Hospital, Houston; treasurer, Loie Davis, Southern Methodist University, Dallas. Mrs. Blake Bryson Patrick will act as president next year. As a fifth delegate to the annual meeting of the American Dietetic Association, Drewsilla Beams, Baylor University Hospital, Dallas, was elected.

Professional Education Section—chairman, Grace Bailey, Texas State College for Women. This section presented each member of the Texas Association with a tabulated list of films available on foods and nutrition which could be used in the visual aid program of teaching. This included the name of the film, the company offering the film, cost, and a short description.

Community Nutrition Section—chairman, Jessie Whitacre, Agricultural Experiment Station, College Station. This section reported as follows: Project—to effect the enrichment of cornmeal and grits. "This movement is already underway as a concerted effort by Extension Services of some southern states. Texas Extension Service has participated in a survey of the number of mills in this state which grind cornmeal and grits and an estimate of the approximate number of bushels of corn ground annually. The next step appears to be an educational campaign to induce Texans to *want* enriched cornmeal and grits and to induce millers and merchants to *want* to provide consumers in Texas with enriched products. The community nutrition section through a committee including representatives from other interested agencies plans to assemble material for educational purposes and hopes to have the material presented in every county of the state.

"The material assembled will include something of the history of the enrichment of cornmeal and grits; the extent of the use of cornmeal and grits by Texans; the comparative behavior of enriched and non-enriched ground corn products on cooking; a comparison of the food value of enriched and non-enriched corn products; and the probable cost of making effective the legislation requiring enrichment, should such legislation be passed.

"If data on enriched and non-enriched ground corn products proves insufficient, it is hoped to secure the cooperation of the Research Committee of Texas State Nutritional Council in making further analyses."

Canadian Dietetic Association Meeting. The annual meeting of the Canadian Dietetic Association was held at the Royal York Hotel, Toronto, June 9-13. The list of speakers included: Alberta Macfarlane, who spoke on "Employee Training Programs are Essential"; Jean I. Simpson who discussed "Frozen Foods"; and Violet Ryley whose subject was "Kitchen Planning and Equipment."

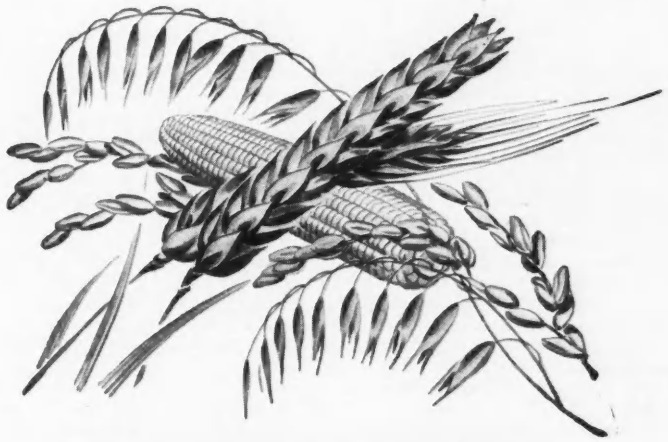
At a luncheon meeting, June 11th, Bertha Nettleton spoke on "Food Standards," and the following day Mrs. Allan Stevenson and Evelyn Creed discussed the School Lunch Programs, Day Nurseries and Day Care Centers; Dr. J. A. McCreary and Isabel Keenleyside of UNRRA were guest speakers; Mrs. Bessie Brooks West, president of the A.D.A., was a guest at this meeting.

New State Dietetic Associations Organized.

Maine Dietetic Association. At the first meeting of the Maine Dietetic Association the following officers were elected: Flora Harriman, of Waterville, president; Ada Felch, Orono, president-elect; Mary Morse, Bangor, secretary; and Isabel Patterson of Augusta, treasurer.

Mississippi Dietetic Association. At a meeting April 12th, in Jackson, the Mississippi Dietetic Association was organized. National policies were discussed and elections held. Marie Hines, secretary of the A.D.A., was the guest speaker. Ethel Summerour of Columbus was elected president and Mary Gill, Vicksburg, was chosen acting secretary. Plans were formulated for an organization meeting in November and a nominating committee was appointed.

North Dakota Dietetic Association. The North Dakota Dietetic Association is in the process of becoming affiliated with the A.D.A. At a recent meeting the following officers were elected: Elvira T. Smith, Fargo, president; Grace Cole, Fargo, vice-president; Sister Mary Martha, Bismarck, secretary; and Marcene H. Ridley, Minot, treasurer.



Breakfast and the Convalescent Patient

After the skin has been closed and the patient returned to bed, healing of the operative wound and ultimate recovery depend upon a multiplicity of factors. Foremost among these is the nutritional state. Ample evidence makes it clear that during the period of postoperative surgical recovery, the metabolic need for protein and vitamins is sharply increased over normal requirements. Failure to satisfy this demand results in retardation of the many processes involved in recovery.

For these reasons, postoperative feeding is begun, and resumption of normal eating habits is encouraged, as quickly as possible. Hence breakfast becomes an important meal to the postoperative patient, not only to satisfy hunger but primarily because of the contribution it can make to total daily intake of essential nutrients.

Cereals enjoy an important place in the postoperative breakfast. Because of the large variety available, taste appeal is assured. Whether eaten hot or cold, together with milk and sugar, the cereal dish provides biologically adequate protein, significant amounts of essential vitamins, minerals, and caloric food energy. The table of composite averages below indicates the nutritional composition of the cereal dish composed of 1 ounce of cereal (whole grain, enriched, or restored to whole-grain values of thiamine, niacin, and iron), 4 ounces of milk, and 1 teaspoonful of sugar.

Calories	**202**
Protein	**7.1 Gm.**
Fat	**5.0 Gm.**
Carbohydrate	**33 Gm.**
Calcium	**156 mg.**
Phosphorus	**206 mg.**
Iron	**1.6 mg.**
Thiamine	**0.17 mg.**
Riboflavin	**0.24 mg.**
Niacin	**1.4 mg.**

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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News about Members. The following members of the American Dietetic Association have recently changed positions, or after service in the armed forces, have returned to civilian life and accepted new assignments. **Gussie A. Miller,** recently discharged from the Army, has reported to her new appointment as assistant administrative dietitian at the Beth Israel Hospital, Boston. . . . **Virginia Toews,** former clinic dietitian at the Presbyterian Hospital, Chicago, has accepted an appointment of clinic dietitian to the University of Kansas Hospital, Kansas City, Kansas. . . . . **Edith M. Coyne,** having served two years as therapeutic dietitian at the Massachusetts General Hospital in Boston, has accepted an appointment as dietitian at the Parkview Hospital, Pueblo, Colorado. Miss Coyne is a graduate of the University of Kentucky and received her training at the Massachusetts General Hospital. . . . **Lois Jane Yost,** formerly of Providence Hospital in Detroit, Michigan, is now therapeutic dietitian at the Easton Hospital in Easton, Pennsylvania. . . . **Clarabel Graham,** recently separated from the Army, has accepted a position at the Presbyterian Hospital in Chicago. . . . **Betty G. Antony,** former ward supervising dietitian at the Cook County Hospital in Chicago, has accepted a position as pediatric dietitian at St. Mary's Hospital in Rochester, Minnesota. . . . . **Jane Reed** resigned from the staff of Kentucky Baptist Hospital in Louisville to accept a position at Michael Reese Hospital in Chicago. Miss Reed was a student dietitian at Michael Reese in 1943. . . . . **Rosalyn Siegel** has returned to civilian life and has accepted a position as administrative dietitian in charge of Men's Hospital, Cook County Hospital in Chicago. . . . . **Ruth Yakel,** who has been attending Teachers College, Columbia University, this past year, has been appointed instructor of foods and nutrition at the University of Utah in Salt Lake City. . . . . **Josephine Kabbes,** formerly associated with St. Mary's Hospital in St. Louis, Missouri, has joined the staff of the Baroness Erlanger Hospital in Chattanooga, Tennessee. Miss Kabbes' new position will be that of supervisor for service to private patients. . . . . **Mary F. McLaughlin,** recently discharged from the Army, has reported to the Indiana University Medical Center in Indianapolis. While in the Army, Miss McLaughlin served in the South Pacific and the Philippines. . . . . **Dorothy MacRae,** a former Army dietitian with 20 months' overseas service, has accepted a position as assistant dietitian at the Children's Convalescent Home in Cincinnati, Ohio. . . . . **Daisy K. Anderson** is the new assistant administrative dietitian at the Pennsylvania Hospital in Philadelphia. Miss Anderson is a former Army dietitian. . . . . **Lillian C. Dittmer** is now associated with the Veterans Hospital in Ft. Lyon, Colorado. Miss Dittmer completed her student training at Fitzsimons General Hospital, Denver, Colorado, in April of this year. . . . . **Mary Jean McColloch** has joined the staff of the Good Samaritan Hospital in Lexington, Kentucky, as assistant therapeutic dietitian. Miss McColloch has recently completed her student training at Miami Valley Hospital in Dayton, Ohio. . . . . **Agnes M. Hough,** has announced the opening of her office in Chicago as dietary consultant. Miss Hough received her B.S. from Michigan State College and her M.A. from Teachers College at Columbia University. She formerly was therapeutic dietitian at the University of Illinois Hospital. . . . . **Pearl Lewis,** formerly consultant to Dr. Clifford Barborka of Chicago, has announced the opening of her office in Chicago for instruction in dietary problems and consulting service for the medical profession. . . . . **Ruth I. Hilfman** has accepted the position of food service director at the Northern Illinois School of Optometry in Chicago. Miss Hilfman is a former Army dietitian, having served in the Mediterranean Theater of Operations. . . . . **Betty Gillespie Trowske** has resigned as chief dietitian of the Veterans Administration at Fort Harvard, Maryland, to accept a position at Presbyterian Hospital in Chicago. . . . . **Victoria Maliszewski,** recently separated from the Army has accepted an appointment as dietitian at the Oak Park Hospital, Oak Park, Ill. . . . . **Marjorie Elizabeth Rose,** recently discharged from the Army, and a graduate of Purdue University, has been appointed therapeutic assistant at the Ball Memorial Hospital, Muncie, Ind. . . . . The New York Hospital has announced the appointment of **Louise Stephenson** as director of nutrition. In this new post Miss Stephenson will direct nutrition activities involving the preparation of more than 2,900,000 meals a year at the New York Hospital, Cornell Medical Center. Miss Stephenson succeeds **Doris Ann Boyle** who has been acting director since **S. Margaret Gillam** resigned earlier this year to become dietary consultant of the American Hospital Association. . . . . **Dorothy Schock,** formerly metabolic dietitian at the Philadelphia General Hospital, has announced her engagement to Dr. Elwood Otho Horne of Worcester, Mass. Miss Schock graduated in 1943 from Johns Hopkins Hospital in Baltimore. . . . . **Louise Wilkonson,** who took her graduate work in hospital administration at Northwestern University, will take her nine months administrative internship at Miami Valley Hospital, Dayton, Ohio, beginning September 1. . . . . **Helen E. Underwood,** formerly associated with the University of Vermont at Burlington, has accepted the appointment of head of institution management and personnel director for Syracuse University, Syracuse, N. Y. She reports in September. . . . . **Elsie Fulks,** former assistant supervisor of cafeterias for the Tennessee Eastman Corporation, has accepted an appointment as director of food service for the Student Union Building at Colorado State College, Fort Collins, Colorado. She reports in the fall. . . . . **Mary Louise Kendrick** has completed her student training at Scripps Metabolic Clinic, La Jolla, California, and accepted an appointment as therapeutic dietitian at Pontiac General Hospital, Pontiac, Michigan. . . . . The Veterans Administration has announced the appointment of **Ruth W. Spencer,** former administrative dietitian at Massachusetts General Hospital, as assistant chief dietitian at the branch office of the Veterans Administration in Boston. . . . . **Genevieve Callahan,** author of cookbooks and magazine articles on home economics, has joined the Hawaiian Pineapple Company and will make her headquarters in San Francisco. She will serve as consultant-director of the home economics department.

News From Our Advertisers. The Florida Citrus Commission announces the development of a new citrus concentrate that has the same taste as fresh-squeezed juices plus all the nutritional advantages. It is available as either a plain concentrate or frozen. The frozen, of course, requires deep-freeze storage until used. This concentrate is especially adaptable to hospitals and institutions dealing in large-scale feedings, because it is a considerable time and labor saver. When reconstituted by the addition of water, the concentrate shows the same amount of vitamin C, of minerals, and of natural fruit sugars as the fresh juice, according to government tests. The density varies. To some concentrates 3 parts of water are added to result in single-strength juice. To other stronger concentrates, 7 or 9 parts of water are added to reconstitute the original juice. Full information regarding wholesalers and manufacturers of the new concentrated juices may be obtained by communicating with the Florida Citrus Commission in Lakeland, Florida.

Wyeth, Inc., has announced the development of Lactamin, a highly-concentrated, pre-digested oral protein product containing the essential amino acids. It is one of the newest of the protein hydrolysate products to be developed. Lactamin, a free flowing powder, readily soluble in water, packaged for convenient oral consumption in the

fortified with Vitamin B_1 and C

available in Orange, Lemon and Lime Flavors

12-Oz. Can Makes 4 Gallons of Beverage

This can when packed contained 7.69 GMS. of VITAMIN C (Ascorbic Acid) and .0649 GMS. VITAMIN B_1 (Thiamine Hydrochloride).

The FINISHED BEVERAGE, made according to directions on label, will contain 120 MGS. VITAMIN C, 1.0 MG. of VITAMIN B_1 and 116.3 CALORIES, TO EACH 8-OZ. GLASS.

This provides 100 and 400 per cent respectively of the adult minimum daily requirements for VITAMINS B_1 and C.

19 OUNCES of FRESH NATURAL, tree-ripened FRUIT JUICE was used in the making of this 12-ounce can of DEHYDRATED SUNWAY BEVERAGE BASE.

Sunway Beverage Base makes it possible to supply nutritious beverage juices at a moment's notice in hospitals, institutions, etc. A beverage base that furnishes high nutritional values of citrus juices and of ascorbic acid and thiamine hydrochloride . . . at a minimum of expense.

These delicious new dehydrated fruit juice flavors are developed by a new and exclusive process and are ***Easy to Prepare***—just add water and sweeten.

So Economical to Use—One 12-ounce can of SUNWAY BEVERAGE BASE makes 4-gallons of true fruit beverage, and costs only $1.50. Cost of 8-oz. glass of "Sunway", including sugar is approximately 2½ cents.

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home or hospital, is made from the lactalbumin of milk—one of the proteins most perfectly supplied with the essential amino acids.

The General Mills radio program, "Jack Armstrong," has been devoted to organizing Clean Plate Clubs for youngsters all over America. During the critical period of May 20th through May 31st, all commercial time on the program was devoted to the famine situation and specifically to how Clean Plate members can make definite, useful contributions. The audience heard news about the importance of wheat to relieve famine, how to organize each listener's own group into a Clean Plate Club, and how the members could follow the rules of good nutrition, ask for no more food than they actually needed, and how to further the idea amongst their friends and families. The importance of the medium of radio in reaching the youth of America has been proved during the war with the success of the salvage and waste-paper drives.

General Foods have announced Instant Maxwell House, a new 100% pure soluble coffee and the new Instant Sanka Coffee. Since September of last year, Maxwell House has been marketing a soluble coffee throughout the eastern part of the United States. Prior to September, large quantities of soluble coffee had been produced by Maxwell House under government contract during most of the war period. There are two types of soluble coffees now on the market—filled and unfilled. The filled type has added carbohydrates while the pure is 100% coffee with nothing added. Instant Maxwell House is a 100% pure instant coffee from expertly brewed Maxwell House Coffee reduced to powder form under strict temperature and humidity controls.

The new Instant Sanka Coffee is said to have a fine flavor and aroma. Like regular Sanka, this new soluble decaffeinated coffee is 100% real coffee—only the caffein has been removed. A jar of Instant Sanka makes and costs about as much as a jar of regular Sanka.

RUTIN

RUTIN, the new drug for reducing high blood pressure should be available in sufficient quantity by early fall, according to Dr. James F. Couch of the USDA's Eastern Research Laboratory.

This advance was made possible, Dr. Couch explained, by the discovery that rutin can be obtained from green buckwheat in larger quantities and at much lower cost than from tobacco, the source originally used. The drug must be approved by the Food and Drug Administration before being placed on the market, he noted.

At present, rutin remains scarce because commercial production has not been started, Dr. Couch said, and distribution is further limited by the fact that once a patient starts taking the drug he has to continue, as it does not always effect a permanent cure. However, it has been made available to a large number of physicians, pharmacologists, and hospitals for clinical study. Investigators have listed lowering of blood pressure and tonic effects on the heart as among the principal physiological results.

"It has proved to be effective in a number of diseases in which a tendency to hemorrhage is a prominent symptom. Increased capillary fragility is reduced to normal in 85 per cent of the cases. Recurrence of apoplexy or of retinal hemorrhage is prevented in a large percentage of cases. Good results have been reported following its use in diabetic retinitis. Several cases of persistent nose-bleed have cleared up after treatment with rutin.

"Although rutin, a light yellow crystalline compound found in plants, has been known for more than a century," according to Dr. Couch, "its value in treating high blood pressure was not discovered until chemists sought to explain what is known as the vitamin P action, by which the capillary walls are strengthened.

"Under certain conditions which are not well understood, these minute blood vessels become abnormally fragile and are susceptible to rupture. The result is a hemorrhage of greater or less severity, depending upon the number of capillaries ruptured and the organ in which it occurs. Hemorrhage in the retina causes partial or complete blindness; in the brain it may cause apoplexy.

"Vitamin C preparations made from citrus fruits or red peppers were known to correct this excess fragility. Szent-Gyorgyi, however, discovered that highly purified ascorbic acid (vitamin C) was deficient in this respect and set about determining the nature of the substance in crude vitamin C which restored the capillaries to normal.

"He prepared an extract which he carefully freed from vitamin C and to which he gave the name 'citrin.' This extract was studied at the Institute for Medicine and Organic Chemistry of the Franz-Josef University in Szeged, Hungary, and was found active in a number of cases of capillary fragility and permeability.

"Szent-Gyorgyi, considering this a possible vitamin effect, named the unknown factor vitamin P, or the permeability vitamin. Extensive chemical study was initiated with the object of isolating and identifying the potent constituent but, up to the present, it has not been successful.

"The active constitutent of 'citrin' was postulated by Szent-Gyorgyi to be a flavone derivative. Chemical considerations support the hypotheses that rutin and possible other flavonols and their glucosides should possess the physiological action ascribed to 'citrin' by a series of investigators. Clinical testing of rutin showed that it is active in reducing capillary fragility. Pharmacologically, rutin and other flavonols have been found to be of negligible toxicity and devoid of cumulative action.